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ABSTRACT

This study of Texas school libraries had three objectives: examine school library resources, services, and use, on the basis of the School Library Programs: Standards and Guidelines for Texas and determine the need for updating these standards and guidelines so that they better serve communities across the state; determine the impact that school libraries have on student performance as measured by the percent of students who met minimum expectations on the Texas Assessment of Academic Skills (TAAS); and highlight library practices in the best performing schools. Data were collected from a random sample of 600 Texas school libraries. The survey data were supplemented with data from the 1999-2000 Texas Education Agency's Public Education Information Management System on school characteristics and student TAAS performance and with community economic data extracted from the Federal Reserve Boards' Federal Financial Institutions Examination Council Web site. The study employed more than 200 school, library, and community variables in examining the relationship between libraries and TAAS performance. This study report consists of five main sections with findings subdivided under each section as follows: (1) Executive Summary and Summary of Findings (Overview, and Study Highlights); (2) Study Objectives and Methodology (Libraries and Student Performance: Recent Research, and Study Methodology); (3) School Library Standards and Library Performance (Library Program Management, Library Financial Resources, Curriculum Integration, Library Collections, Technology Resources, and Library Facilities and Usage); (4) The Relationship between Library Resources and Activities and Student Performance (Library Program Development, Leadership: Library Staff Involvement with Administrators, Teachers and Colleagues, Library Staff Teaching Activities: Collaboration, Library Technology, School Technology Access to Library Resources, Association among Library Variables: Factor Analysis, Contribution of Library Resources and Activities to TAAS Performance, Graphic Analysis: The Relationship between TAAS Performance and Library and School Variables, and Library Programs in Schools with High and Low TAAS Performance); and (5) Student Performance in Schools without Librarians (Student Performance on TAAS and Demographic Analysis). The questionnaire is appended. (AEF)

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STANDARDS, RESOURCES, SERVICES, AND STUDENTS' PERFORMANCE

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Prepared for: Texas State Library and Archives Commission

April 2001

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Ester G. Smith

EGS Research and Consulting

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TEXAS SCHOOL LIBRARIES: STANDARDS, RESOURCES, SERVICES, AND STUDENTS' PERFORMANCE

I. EXECUTIVE SUMMARY

1. Overview

1.1 Study Objectives and Data

The Texas Study (Texas School Libraries: Standards Resources, Services and Students' Performance) had three objectives. (1) Examine school library resources, services, and use, on the basis of the School Library Programs: Standards and Guidelines for Texas and determine the need for updating these standards and guidelines so that they better serve communities across the State. (2) Determine the impact that school libraries have on student performance as measured by the percent of students who met minimum expectations on the reading portion of the statewide standardized test, the Texas Assessment of Academic Skills (TAAS.) (3) Highlight library practices in the best performing schools.

Data were collected from a random sample of 600 Texas school libraries. The survey data were supplemented with data from the 1999-00 Texas Education Agency's Public Education Information Management System (PEIMS) on school characteristics and student TAAS

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performance and with community economic data extracted from the Federal Reserve Boards' Federal Financial Institutions Examination Council (FFIEC) web site. The study employed more than 200 school, library, and community variables in examining the relationship between libraries and TAAS performance.

1.2 Findings, Conclusions, and Recommendations

The Texas Study demonstrated higher TAAS performance at all educational levels in schools with librarians than in schools without librarians. Over 10 percent more students in schools with librarians than in schools without librarians met minimum TAAS expectations in reading. On average, 89.3 percent of students in schools with librarians compared with 78.4 percent in schools without librarians met minimum TAAS expectations in reading.

The Texas Study also showed that socio-economic variables such as the percentage of white students, Hispanic students, and economically disadvantaged students explain most of the variance in TAAS performance at all educational levels. At the elementary school level, socio-economic variables explained 26 percent of the variance; at the middle/junior high school level they explained 44 percent; and at the high school level they explained 55 percent.

Library variables explained a smaller but still very significant portion of the variance in TAAS performance. They explained approximately four percent of the variance in TAAS performance at the elementary and middle/junior high school levels and 8.2 percent at the high school level. Also, library variables were generally more important to explaining the variance in TAAS than school variables such as the number of school computers per student, teacher experience, and teacher turnover ratio.

TAAS performance was associated with different library factors at each educational level. Library variables found to be important were:

Elementary School:

- Library volumes purchased in 1999-00 per 100 students
- Library operational expenditures per student
- Library computers connected to a modem per 100 students
- Library software packages per 100 students

Middle/Junior High School:

- Identifying materials for instructional units developed by teachers
- Providing information skills instruction to individuals or groups

High School:

- Library staff per 100 students

- Library staff hours per 100 students
- Library hours of operation per 100 students
- Volumes per students
- Current subscriptions to magazines and newspapers per 100 students
- Planning instructional units with teachers
- Providing staff development to teachers

While these library variables, in addition to the socio-economic variables, play a primary role in explaining the variance in TAAS performance, the association between TAAS performance and library resources and activities can not be inferred as a causal relationship solely on the basis of statistical analysis, although a causal relationship is highly plausible. Moreover, the statistical relationship between library resources and activities and students' TAAS performance may even be underestimated due to the nature of TAAS as a measure of performance.

This study also compared the 25 schools with the highest percent of students who met minimum expectations on TAAS with the 25 lowest performing schools. A number of differences were found between these two groups that centered around library staffing levels, collection size, cooperative activities with teachers, library technology, and school technology. Significant differences were found between these two groups of schools in the ethnic/racial composition and economic status of the students and their respective communities. The lower performing schools had significantly higher levels of minority students and economically disadvantaged students than the high performing schools.

While economic status is a strong predictor of student accomplishment, library variables, nonetheless, play a smaller but still very significant role in TAAS performance. This study indicates that library staffing levels, collection sizes, librarian interaction with teachers and students, and library technology levels have a positive association with TAAS performance at the elementary, middle/junior high, and high school levels. While causal relationships cannot be unequivocally proven through correlational studies such as this one, nevertheless, recommendations may be made by combining these statistical results with the experiences of librarians in order to chart the best possible course for the future of libraries and the future of the students. In addition to working to raise all of the variables mentioned above to acceptable levels, the study demonstrated that libraries can play a very special role in providing enrichment to those students who come from economically disadvantaged backgrounds and who need additional help to develop the skills they will need to succeed.

The data provided in the survey of libraries were analyzed relative to the School Library Programs: Standards and Guidelines for Texas. The analysis revealed the following.

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Library Program Management: Funding

There are significant gaps between recommended library funding levels and actual funding levels in elementary, middle/junior high, and high school libraries. Libraries' operating budget is strongly associated with collection size, the currency of the collection, and libraries' staffing resources. Libraries with larger operating budgets have larger and more current collections and more staffing resources to support student needs. There is a wide variation in library operating budgets statewide. For example, the average operating budget per student in elementary school libraries is $22.14. Library operating budgets range from $16.52 in the lowest performing elementary schools to $36.02 per student in the highest performing elementary schools.

Library Program Management: Staffing

There are significant gaps between recommended staffing levels and actual staffing levels. Libraries in schools with more than 350 students are generally understaffed. Currently, 38.5 percent of elementary school libraries, 35 percent of middle/junior high school libraries, and 22.5 percent of high school libraries have only one staff member. Lower than recommended staffing levels and especially the absence of library aides significantly curtail the range and type of services that librarians can provide. In libraries staffed by both a librarian and an aide, librarians are more likely to offer services identified in the standards and guidelines as high priority. These high priority services consist of collaboratively planning and teaching with teachers, providing staff development to teachers, facilitating information skills instruction, managing technology, communicating with school administrators, and providing reading incentive activities. Furthermore, the number of librarians and librarian hours of service per 100 students significantly impact library use. Libraries with higher librarian staffing levels and hours accommodate greater use of the library and its resources, allow more students to visit the library, and enable more materials to be checked out. Libraries that are more adequately staffed also have larger and more current collections and larger technology and financial resources. The staffing levels recommended by the School Library Programs: Standards and Guidelines for Texas must be followed to ensure that key library services are offered and that the collection size and its currency are adequate, and to encourage more frequent use of the library by students.

There is a growing presence of technology resources in the library and in the school with access to networked library resources. The training role of librarians must be emphasized. This study indicates that current subscriptions, computers with modems, and library software programs contribute to student achievement. It is plausible that the full potential of technology resources such as those provided through statewide initiatives will be achieved when training of staff and students enable wider integration of these resources into the curriculum. Adequate staff must be available to support library and school technology based on the size of student enrollment and the level of technology in use in the school and library program.

Curriculum Integration

The study indicates that professional librarians expend the greatest portion of their time on basic library services that may be performed by library aides (paraprofessionals) if libraries are staffed in accordance with school library standards and guidelines. School library staff spend a minor portion of their time engaging in collaborative (curriculum integration) activities such as planning with teachers and training teachers, including training on electronic resources such as those available through the statewide initiatives, the Texas Library Connection. These activities are requirements in the Texas Administrative Code Title 19, Part 7, Chapter 239, Subchapter B, Rule 239.55, the State Board for Educator Certification Standards for School Librarians Certificate.

If funds spent on technology and statewide resource sharing initiatives is to maximally benefit students, training in curriculum integration should be addressed through Continuing Professional Development for librarians in accordance with this Code.

Library Resources

School library collections contain an array of electronic resources that can both replace and supplement print materials; thereby altering the definitions of "current" information and collection size. The standards and guidelines should be updated to reflect the change in the need to subscribe to print copies of newspapers, magazines, and encyclopedias that are currently available online.

The infusion of technology into the library and the school has increased the presence, role and impact of technology, especially in the library. The increased availability of online resources, as exemplified by the Texas Library Connection, has forever altered the definition of collection size. Online databases make it unnecessary, for example, to subscribe to as many print copies of newspapers and magazines and to purchase encyclopedias or other reference books that can be accessed online.

The availability of online resources has also increased the value of "current" information. This study indicates that currency and size of the library collection are factors in student achievement. Due to the availability of electronic resources in libraries, collection size should be determined as a balance of information provided through technology and print resources. The standards and guidelines should address the issue of information currency and point to areas where currency is important. In areas where current information is more important than the volume of materials available in a library, measuring the size of the collection should be altered to measuring the volume of current information. The goal is for students to be information literate. School library standards and guidelines should indicate a variety of output measures that describe the effectiveness of the library program beyond the size of the physical collection. The expanded definition of library collections should include measures that describe the outcome of collaboration and instruction in information literacy.

The ability to access networked library (electronic) resources remotely from library computers, classroom computers, and the school and homes of students and teachers has expanded resource utilization beyond traditional library boundaries. Library standards must provide greater and more detailed recognition to the role of technology in library operations and to the access of resources from the library, the classroom, school offices, and the home. School librarians must encourage utilization via remote access by staff and students and the standards and guidelines must include measures which describe remote utilization such as the number of hits via local and wide area networks and the Internet.

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2. Study Highlights

2.1 Objectives and Methodology

The study had three objectives. (1) Examine school library resources, services, and use on the basis of the School Library Programs: Standards and Guidelines for Texas and determine the need for updating these standards and guidelines so that they better serve communities across the State. (2) Determine the impact that school libraries have on student performance. (3) Highlight library practices in the best performing schools.

The questionnaire designed for this study inquired into library staffing, activities performed and time devoted to each activity, hours of operation, type and size of collection, library usage, library technology resources, school technology with access to library resources, and library funding. Data was collected from a random sample of 600 school libraries, which according to the 1999-00 Texas Education Agency's Public Education Information Management System (PEIMS), reported a school librarian on staff. The sample, proportional to the universe of school libraries in Texas, consisted of 327 elementary schools, 120 middle/junior high schools, 139 high schools, and 14 elementary/secondary schools. Data were collected through a self-administered mail survey during September-November 2000. Responses were obtained from 503 libraries, yielding an 84 percent response rate. Data from 500 responding libraries were used in the analyses. These consisted of 267 elementary school libraries, 104 middle/junior high school libraries, and 129 high school libraries.

Survey data were supplemented with secondary data available from the 1999-00 Texas Education Agency's Public Education Information Management System (PEIMS) on school characteristics and student TAAS performance. Survey data were also supplemented with community economic data extracted from the Federal Reserve Boards' Federal Financial Institutions Examination Council (FFIEC) web site. TAAS and student demographic data were also provided by PEIMS on all schools without a librarian.

2.2 Libraries and School Library Programs: Standards and

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Guidelines for Texas

The Texas State Library and Archives Commission (TSLAC), in consultation with the State Board of Education, adopted standards for school library services. The Texas Education Code 33.021 sets forth that "A school district shall consider the standards in developing, implementing, or expanding library services." The School Library Programs: Standards and Guidelines for Texas address five components:

- Library program management
- Library learning environment
- Curriculum integration
- Resources
- Facilities

The standards and guidelines are applied at four levels: exemplary, recognized, acceptable, and below standard.

School Library Programs: Standards and Guidelines for Texas are available in electronic format at http://www.tsl.state.tx.us/ld/school/libs/standards.html

Library Funding

Texas school libraries are underfunded based on the Public School Library Programs: Standards and Guidelines for Texas.

The standards and guidelines recommend that schools allocate annually no less than one to three percent of their instructional budget "to acquire library materials, equipment and supplies in support of school library program." The standards and guidelines recommend that "acceptable" libraries have no less than one percent of the instructional budget and that "exemplary" libraries have no less than three percent of the school's instructional budget. On average, libraries' budget for 1999-00 ranged between 0.5 percent (elementary and middle/junior high school libraries) and 0.8 percent (high school libraries) of the school's instructional budget.

The average elementary school library's operating budget in 1999-00 was $12,529; 75 percent of it was funded from local tax dollars. Middle/Junior high school libraries operating budget was $16,144.67; 69 percent of it was funded from school resources. High school libraries' operating budget was $27,174.66; 83 percent of it was funded from school sources. On a per student basis, library's operating budget funded from school sources ranged from $16.45 to $26.69. Taking into account all funding sources, libraries' mean operating budget per student ranged from $22.14 to $31.45.

Table I.1 – School Library 1999-00 Operating Budget

Operating Budget (1999-00)	Elementary School Libraries		Middle/Junior High Libraries		High School Libraries	
Funded by school	$9,371.06	74.8%	$11,095.13	68.7%	$22,625.68	83.3%
Funded from other sources	$3,159.16	25.2%	$5,050.54	31.3%	$4,557.78	16.7%
Total budget	$12,529.47	100.0%	$16,144.67	100.0%	$27,174.66	100.0%
Library operating budget per student (school funded)	$16.45		$16.64		$26.69	
Library operating budget per student (all funding sources)	$22.14		$24.26		$31.45	

Libraries' operating budget is strongly associated with libraries' collection size, the current status of the collection, and libraries' staffing resources. Libraries with larger operating budgets have larger and more current collections and more staffing resources to support student needs.

Library Staffing

Public School Library Programs: Standards and Guidelines for Texas recommend a graduated staffing structure for school libraries based on the size of the student population which includes certified librarians and paraprofessionals. Based on the standards and guidelines, Texas school libraries with more than 350 students are generally understaffed. Elementary and middle/junior high school libraries of all sizes typically have one librarian and a part-time aide. Between 36 and 38 percent of the elementary and middle/junior high school libraries have only one staff member. High school libraries typically have one full-time librarian, one part-time librarian and about one full-time aide. However, nearly one-quarter of high school libraries have only one staff member..

Table I.2 – School Library Staffing

Staffing	Elementary School Libraries	Middle/Junior High School Libraries	High School Libraries

Number of libraries mean	1.01	1.05	1.40
Number of library aides mean	0.67	0.71	0.98
Number of library staff mean	1.68	1.76	2.36
Percent of libraries with one staff	38.5%	35.9%	22.5%
Percent of libraries with two staff	55.8%	52.4%	39.5%
Percent of libraries with three or more staff	5.7%	11.6%	38.0%
Librarian person hours per week (mean)	38.8	40.2	53.9
Library aide(s) person hours per week (mean)	22.7	25.0	35.5
Library staff person hours per week (mean)	61.5	65.2	89.5

Lower than recommended staffing levels and especially the absence of library aides significantly curtail the range and type of services that librarians can provide. In libraries staffed by both a librarian and an aide, librarians are more likely to offer services identified in the standards and guidelines as high priority. These high priority services consist of collaboratively planning and teaching with teachers, providing staff development to teachers, facilitating information skills instruction, managing technology, communicating with school administrators, and providing reading incentive activities. Furthermore, the number of librarians and librarian hours of service (per 100 students) significantly impact library use. Libraries with higher librarian staffing levels and hours accommodate greater use of the library and its resources and allow more students to visit the library and enable more materials to be checked out. Library staffing levels represent the value that schools attach to libraries. Libraries that are more adequately staffed also have larger and more current collections and larger technology and financial resources.

Library Services

Library staff are expected to provide a wide range of services. Library staff spend the following average percentages of their time performing the named activities during a typical week.

- Basic Library Activities, such as checking materials, shelving, processing and retrieving: 43 percent in elementary school libraries to 46 percent in high school libraries.
- Administration: 21 percent to 24 percent.
- Information Access and Delivery: 17 percent in high school and middle/junior high school libraries to 24 percent in elementary school libraries.
- Teaching and Staff Training: 12 to 16 percent.

The School Library Programs: Standards and Guidelines for Texas recommend that librarians engage in collaborative curriculum related integration. The following percentage of librarians report engaging in these activities.

- Staff Development to Teachers and Other School Staff: 60 percent.
- Teach Cooperatively with Teachers: 67 to 75 percent.
- Participate on Curriculum Committees: 75 to 83 percent.
- Plan Instructional Units with Teachers: 80 percent.

Librarians who do engage in collaborative activities spend on average between 9.9 and 14.9 percent of their time in collaborative activities per week. Library staff spend the following percentages of their time in collaborative activities, on average.

- Staff Development to Teachers and Other School Staff: 1.1 to 1.5 percent.
- Participate on curriculum and Other Committees: 1.4 to 2.3 percent.
- Planning Instructional Units with Teachers: 2.3 to 3.1 percent.
- Teaching Cooperatively with Teachers: 5.1 to 8.0 percent of time.

The following table shows selected library staff services, the percent of libraries providing these services; average number of hours per week each service is provided, and the average percent of time per week library staff engage in each service.

Table I.3 – School Library Services

Staff Services	Elementary School Libraries	Middle/Junior High School Libraries	High School Libraries

	% Libraries	Hours per Week	% Hours per Week	% Libraries	Hours per Week	% Hours per Week	% Libraries	Hours per Week	% Hours per Week
Plan instructional units with teachers	78.6%	1.45	2.5%	81.7%	1.86	3.1%	81.4%	1.87	2.3%
Teach cooperatively with teachers	67.4%	2.94	5.1%	74.0%	4.73	8.0%	75.2%	5.96	7.2%
Provide staff development to teachers or other school staff	60.3%	0.63	1.1%	61.5%	0.92	1.5%	59.7%	0.94	1.1%
Meet with building or district curriculum committees	83.1%	1.12	1.9%	77.9%	1.37	2.3%	75.2%	1.13	1.4%
Assist teachers to access or utilize state initiative information	47.6%	0.94	1.6%	41.3%	0.87	1.5%	36.4%	0.99	1.2%
Identify materials for instructional units developed by teachers	92.1%	2.79	4.8%	88.5%	3.26	5.5%	93.0%	4.83	5.9%
Provide information skills instruction	83.5%	4.21	7.2%	81.7%	4.25	7.2%	87.6%	7.23	8.8%
Provide reading incentive activities	97.4%	7.17	12.3%	76.0%	2.91	4.9%	64.3%	1.82	2.2%
Manage library technology	88.4%	5.16	8.9%	88.5%	6.76	11.4%	93.0%	13.46	16.4%
Administer electronic reading programs	62.9%	3.48	6.0%	62.5%	3.91	6.6%	30.2%	2.08	2.5%
Manage inter-library loans	50.6%	0.55	0.9%	44.2%	0.41	0.7%	51.2%	0.76	0.9%
Meet with building and district library staff	75.6%	0.82	1.4%	72.1%	0.82	1.4%	72.1%	1.20	1.5%
Meet with library staff outside the district	26.6%	0.32	0.5%	28.8%	0.31	0.5%	42.6%	0.44	0.5%
Meet with principal or other building or district administrators	80.9%	0.77	1.3%	70.2%	0.68	1.1%	81.4%	0.89	1.1%
Attend faculty or staff meetings	91.4%	1.00	1.7%	88.5%	0.84	1.4%	89.1%	0.91	1.1%

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Library Resources

As recommended by the School Library Programs: Standards and Guidelines for Texas, libraries have diversified collections of print and non-print materials. Libraries are expanding their non-print collection from video to CD ROM and to Internet-based sources.

Seventy-seven percent of elementary school libraries, 93 percent of middle/junior high school libraries and 74 percent of high school libraries have collection development policies. Between 50 and 55 percent of the libraries participate in a program to evaluate print and non-print resources. Such a program is typically staffed by librarians and teachers who meet periodically and evaluate new materials.

Libraries' collections most typically (90 percent or more of libraries) consist of print volumes, newspapers and magazines, and video materials. The following percentage of libraries include these technology-based collections.

- Encyclopedias and Reference Titles on CD ROM or Laser Discs: 80 to 86 percent.
- Computer Software Packages: 56 to 64 percent.
- Electronic, Internet-based, Subscriptions: 43 to 53 percent.

Approximately 75 percent of libraries in Texas belong to the Texas Library Connection, a statewide technology resource sharing initiative. Participating libraries have access to the Gale Group databases and Encyclopedia Britannica. The percent of libraries subscribing to additional online licensed services is currently still small, especially at the elementary and middle/junior high school levels.

A wide-range of technology resources are available to Texas school libraries. Most libraries (97 to 99 percent) have computers. On average, elementary school libraries have 10 computers; middle/junior high school libraries have 16 computers; high school libraries have 20 computers. Most libraries have computers that are connected to the Internet (92 to 95 percent). Most libraries have computers with CD ROM drives (94 to 95 percent). Additionally, the following percentages of Texas school libraries offer technologies which extend electronic resources beyond their physical facilities.

- Remote Access to the Library Catalog: 87 to 88.5 percent.
- Remote Access to the Libraries' Subscription Databases: 81 to 84.5 percent.
- Computers with Modems that Enable Staff and Students to Access Web-based Resources and Use Electronic Mail: 68 to 73 percent.

Library resources in 65 to 70 percent of the schools can also be accessed from computers in classrooms, offices, and other school locations, thereby expanding the reach of the library beyond its physical location. On average, networked library resources may be accessed in elementary schools through 62 computers; 97 computers can do so in middle/junior high schools; and 159 computers in high schools.

Libraries are also able to expand their collections by accessing Internet resources as well as engaging in inter-library loans. Between 42 and 60 percent of the libraries loan to and borrow materials from other libraries in the district. Fewer than 10 percent of the libraries loan or borrow materials from libraries outside the district. Typically, inter-library borrowing or loans involve five or fewer items per week.

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Facilities: Hours of Operation

Seventy to 83 percent of the libraries offer access to their resources beyond the instructional day, as recommended by the School Library Programs: Standards and Guidelines. These libraries are open, on average, between two and three hours a week before school and between 2.7 and 3.9 hours a week after school hours. Libraries with larger operating budgets and more diverse collections are likely to be open longer hours. Longer hours of operation are associated with greater library use, as reflected by the number of visits to the library and the volume of materials checked out.

Conclusions

A review of library resources, operations, and services relative to the School Library Programs: Standards and Guidelines for Texas reveals:

1. Significant gaps between recommended library funding levels and actual funding levels.

2. Significant gaps between recommended staffing levels and actual staffing levels.

3. The great extent to which library staff currently engage in delivering basic library services, and the minor extent to which they currently engage in collaborative (curriculum integration) activities recommended by the school library standards and outlined in the State Board of Educator Certification Standards for School Librarians Certificate and Certificate Renewal Requirements.

4. The growing presence of technology resources in the library and in the school with access to networked library resources.

5. The increase in electronic, Internet-based, materials that can both

replace and supplement print materials; thereby altering the definitions of "current" information and collection size.

6. The expansion of access to library (electronic) resources from the physical library, to the school and to the home of students and teachers.

2.3 Indicators of Library Performance

The study employed more than 200 variables in examining the relationship between libraries and TAAS performance. Among the large number of variables examined, 34 were identified through statistical techniques as significant indicators of library performance. Statistical techniques were also used to group these variables. Variables were grouped into five areas, representing library performance factors.

- Program development:

  Number of staff per 100 students
  Staff hours per 100 students
  Library's hours of operation per 100 students
  Print volumes per student
  Current newspaper and magazine subscriptions per 100 students
  Video materials per 100 students
  Software packages for in-library use per 100 students
  Volumes purchased in 1999-00
  Library's operational expenditures per student

- Leadership: staff involvement with administrators, teachers, and colleagues (hours per week):

  Meeting with principal and administrators
  Serving on curriculum committees
  Meeting with library staff in district
  Meeting with library staff outside the district
  Attending faculty meetings

- Collaboration through teaching (hours per week):

  Planning instructional units with teachers
  Teaching cooperatively with teachers
  Providing training (staff development) to teachers
  Assisting teachers in accessing and using information about state funded reading programs
  Identifying materials for instructional units developed by teachers
  Teaching information literacy to students

- Library technology - computers in or under library supervision (per 100 students):

Total number of computers
Computers with Internet connection
Computers with access to library catalog
Computers with access to library databases
Computers with CD ROM drives
Computers with networked access to CD ROM resources
Computers connected to a modem

- School technology – school computers with access to networked library resources (per 100 students):

Total number of computers
Computers with Internet connection
Computers with access to library catalog
Computers with access to library databases
Computers with CD ROM drives
Computers with networked access to CD ROM resources
Computers connected to a modem.

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2.4 Libraries' Effect on Students' TAAS Performance

Nearly one-quarter of all schools in Texas do not have librarians. At all educational levels over 10 percent more students in schools with librarians than in schools without librarians met minimum TAAS expectations in reading. On average, 89.3 percent of students in schools with librarians compared with 78.4 percent of students without librarians met minimum TAAS expectations. In 2.5 times more schools with librarians (52 percent) than schools without librarians (21 percent), over 90 percent of the students met minimum TAAS expectations. In over one-quarter of the schools without librarians compared with five percent of schools with librarians, 70 percent of less students met minimum TAAS expectations.

Student performance in Texas, similar to findings of studies in other states, is affected, in large part, by socio-economic conditions. Library variables contribute a smaller but not insignificant portion to students' TAAS performance. The effect of socio-economic conditions on student performance is evident both in schools with and without librarians. Schools without librarians had a large percent of economically disadvantaged students (55 percent) than schools with librarians (49 percent); the former also exhibited lower TAAS performance. In a recent study in Massachusetts, elementary school library books per pupil, presence of a full-time librarian, and automation "explained" 7.5 percent of student performance. At the middle/junior high school level, library variables explained 4.5 percent of performance; and at the high school level, library variables explained 1.5 percent of student performance.

Student performance was mostly explained by the percent of students entitled to free lunch. Similarly, in a recent study in Colorado, library staff, collection size, and budget explained 7.5 percent of student performance at the elementary level and 1.6 percent at the secondary level.

In the Texas study, library variables explained four percent of student performance on TAAS reading at the elementary school level, 3.9 percent at the middle/junior high school level, and 8.2 percent at the high school level. Also, library variables were generally more important to explaining the variance in TAAS than school variables such as the number of school computers per student, teacher experience, and teacher turnover ratio. In Texas, as in these other states, student performance was largely explained by socio-economic factors associated with the students and their communities. Among the socio-economic variables, the percent of economically disadvantaged students was the strongest predictor of TAAS performance.

The powerful and highly significant effect of socio-economic factors on students' performance is further magnified when schools with the highest TAAS performance were compared to schools with the lowest TAAS performance. Elementary schools with the lowest TAAS performance have three times as many economically disadvantaged students; three times as many minority students; more than three times as many students with limited English proficiency; and one-half of the median family income. The lowest performing middle/junior high schools have nearly three times as many economically disadvantaged students; five times as many students with limited English proficiency; four times as many people in poverty in the community; and one-half of the median family income. The lowest performing high schools have nearly three times as many economically disadvantaged students and more than six times as many students with limited English proficiency. These high schools also have four times as many people in poverty in the community; more than three times as many minorities in the community; and two-thirds of the median family income. The libraries in both groups of schools also differ at all levels. The libraries in schools with the highest TAAS performance have more resources than the libraries in the low performing schools and spend more time on collaborative teaching-related (curriculum integration) activities.

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Table I.4 – 25 Highest and 25 Lowest TAAS Performing Schools (Selected Variables)

Comparison	Elementary School	Middle/Junior High Schools	High Schools

	Highest TAAS	Lowest TAAS	Highest TAAS	Lowest TAAS	Highest TAAS	Lowest TAAS
TAAS percent of students who met minimum expectations in reading	99.64	64.53	97.58	77.09	98.72	76.05
Library staff per 100 students	.482	.403	.325	.266	.606	.346
Library staff hours per 100 students	11.94	13.92	11.61	9.48	21.26	12.63
Library hours of operation per 100 students	12.21	9.75	8.46	6.97	12.70	8.52
Print volumes per student	20.35	16.47	17.03	12.77	23.99	15.00
Library operating expenditures per student	$36.02	$16.52	$30.30	$20.60	$57.47	$23.92
Meet with district library staff	.863	.794	0.95	0.68	0.67	1.59
Plan instructional units with teachers	1.29	1.25	2.31	1.76	2.18	1.46
Teach cooperatively with teachers	2.40	1.76	4.34	4.48	4.18	6.54
Computers in library per 100 students	3.91	2.88	2.32	1.80	3.14	2.69
Library computers with access to catalog	2.95	1.40	1.63	1.07	2.16	1.88
Library computers with CD ROM drives per 100 students	3.47	2.59	2.14	1.42	2.77	2.47
School computers per 100 students	16.77	10.26	10.56	9.55	28.98	13.21
School computers with Internet connection per 100 students	12.12	8.83	8.84	8.89	23.73	12.06

School computers with access to library catalog	9.09	4.22	6.54	7.44	21.03	8.23
School computers with access to library databases per 100 students	9.12	5.95	7.91	7.90	22.54	12.05
Percent of economically disadvantaged students	29.10	84.59	21.81	68.30	21.05	59.10
Percent of white students	65.64	11.72	73.92	20.88	75.14	20.10
Percent of Hispanic students	25.48	56.47	16.57	63.84	16.22	57.85
Percent of students with limited English proficiency	11.83	38.40	3.19	19.58	2.24	16.26
Percent minority staff	18.75	56.84	8.63	40.70	10.73	44.49
Percent minority population	25.29	67.19	15.86	60.36	13.76	60.18
Percent of community in poverty	10.73	29.00	6.86	28.40	6.70	26.58
Median family income	$74422	$37894	$67026	$36903	$63842	$38220

TAAS performance was associated with different library factors at each educational level. For example, at the elementary school level, TAAS performance was explained by two library factors depicting program development and library technology. The two factors were composed of the following variables:

- Library volumes purchased in 1999-00 per 100 students
- Library operational expenditures per student
- Library computers connected to a modem per 100 students
- Library software packages per 100 students

At the middle/junior high school level, TAAS performance was explained by an instructionally related factor composed of:

- Identifying materials for instructional units developed by teachers
- Providing information skills instruction to individuals or groups

At the high school level, TAAS performance was explained by two library factors depicting program development and collaborative activities. These factors were composed of the following variables:

- Library staff per 100 students
- Library staff hours per 100 students
- Library hours of operation per 100 students
- Volumes per students
- Current subscriptions to magazines and newspapers per 100 students
- Planning instructional units with teachers
- Providing staff development to teachers

While these library variables, in addition to the socio-economic variables, play a primary role in explaining the variance in TAAS performance, the association between TAAS performance and library resources and activities can not be inferred as a causal relationship solely on the basis of statistical analysis, although a causal relationship is highly plausible. Moreover, the statistical relationship between library resources and activities and students' TAAS performance may even be underestimated due to the nature of TAAS as a measure of performance. TAAS basically groups all students who meet minimum requirements into a single cluster regardless of the degree to which they meet these requirements. Each student who meets the minimum requirements is given equal weight. In this sense, TAAS offers a "unrefined" measure of performance. In addition, the Texas School Accountability System and the emphasis in the past few years in Texas on reading and TAAS resulted in increased TAAS performance. Consequently, the variance in the percent of students who meet minimum expectations has greatly decreased. For example, only 13 to 16 percent of the schools in our sample had fewer than 80 percent of students meeting minimum expectations on TAAS reading. In 46 to 54 percent of the schools 91 to 100 percent of the students met minimum expectation on TAAS reading. This lack of variance further limits the detection of effects.

The relationship between the library resources and activities identified through the multiple regression analyses as being associated with student performance on TAAS is not a linear relationship, as assumed in previous studies. Treating the relationship between TAAS performance and library resources and activities as linear may be misleading because it may not detect significant changes in variance. The examination of the nonlinear relationship between these library variables and TAAS performance at all educational levels indicates that the variation in TAAS performance is high when these library variables have low values. The variation in TAAS performance decreases as the value of these library variables increases. That is, in low performing schools, libraries have fewer of these resources and devote less time to these activities. High performing schools have more library resources and devote more time to collaborative activities. Furthermore, TAAS results tend to increase and become more consistent, for example, as library staff spend more time in collaborative activities.

Minimally, schools at all levels should strive to increase their library resources and activities to levels maintained by the high performing schools. Optimally, expenditures and activities should be increased to meet the "Exemplary" level of the School Library Programs: Standards and Guidelines for Texas."

As immediate objectives, elementary schools should:

- Increase the library budget to the recommended level,
- Increase the number of volumes purchased annually,
- Increase the number of software packages for use in the school library by students,
- Explore the feasibility of expanding the use of adult volunteers,

Middle/Junior high schools should:

- Increase to the appropriate level the number of hours librarians spend identifying materials for instructional units developed by teachers, and
- Increase to the appropriate level the number of hours librarians spent providing information skills to individuals and groups.

High schools should:

- Increase to the appropriate level the number of library staff ,
- Increase to the appropriate level the number of library staff hours,
- Increase to the appropriate level the number of hours of library operations,
- Increase to the appropriate level the number of hours librarians spend planning instructional units with teachers,
- Increase to the appropriate level the number of hours librarians spend providing staff development to teachers,
- Increase to the appropriate level the size of the library's print volume collection,
- Increase to the appropriate level the number of current subscriptions to newspapers and magazines.

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II. STUDY OBJECTIVES AND METHODOLOGY

Texas Education Code: 33.021: SUBCHAPTER B. LIRARIES Sec. 33.021. Library Standards, mandates that the Texas State Library and Archives Commission (TSLAC) in consultation with the State Board of Education shall adopt standards for school library services. School districts shall consider these standards in developing, implementing, or expanding library services.

To meet the State mandate of updating library standards so that they better serve communities across the State, the Texas State Library and Archives Commission contracted for an analytical study with three objectives:

1. Examine school library resources, services, and use on the basis of the School Library Programs: Standards and Guidelines for Texas and determine the need for updating these standards and guidelines so that they better serve communities across the State.
2. Determine the impact that school libraries have on student performance as measured by student performance on the Texas Assessment of Academic Skills (TAAS).
3. Highlight library practices in the best performing schools.

1. Libraries and Student Performance: Recent Research

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Several recent state studies examined the relationship between library resources and activities and student performance. These studies included:

Keith Curry Lance, Christine Hamilton-Pennell, Marcia J. Rodney, Lois A. Petersen, Clara Sitter, *Information Empowered; The School Librarian as an Agent of Academic Achievement in Alaska Schools*; Alaska State Library, Juneau, Alaska, 1999

Keith Curry Lance, Marcia J. Rodney, Christine Hamilton-Pennell, *How School Librarians Help Kids Achieve Standards; The Second Colorado Study*; Colorado State Library, Colorado Department of education, Denver, Colorado; April 2000

Keith Curry Lance, Marcia J. Rodney, Christine Hamilton-Pennell, *Measuring Up to Standards; The Impact of School Library Programs & Information Literacy in Pennsylvania Schools*; Pennsylvania Citizens for Better Libraries, Greensburg, Pennsylvania; February 2000

James C. Baughman, Ph.D., "School Libraries and MCAS Scores," (Preliminary Edition). A Paper Presented at a Symposium Sponsored by the Graduate School of Library and Information Science; Simmons College, Boston Massachusetts; October 26, 2000.

The studies conducted in Colorado, Alaska, Pennsylvania, and Massachusetts:

- Identified characteristics of libraries associated with student performance.
- Recognized the powerful impact of school and community socio-economic variables on student performance.
- Documented that library resources and activities explain only a very small percent of the variance associated with student performance.

Studies conducted by Lance, Rodney, and Hamilton-

Pennell in Colorado (twice), Pennsylvania, and Alaska demonstrated that library support by the principal and teacher collaboration with librarians is important to making the library program an integral part of teaching and learning. The librarians have a teaching role as co-teachers of students and trainers of teachers in information technology. For the librarian to be a pivotal player, the availability of support staff is essential. Library programs in schools with high test scores are those that have technology that extends access to information resources beyond the library to classrooms, labs, and other instructional sites.

A recent Colorado study (*How School Librarians Help Kids Achieve Standards, The Second Colorado Study*, April 2000) by Lance, Rodney, and Hamilton-Pennell surpassed previous studies by creating a series of library indicators (i.e. groupings of variables), rather than using individual variables, to predict student performance on the Colorado Student Assessment Program (CSAP) reading test. The indicators documented in the study included the following:

- Library Program Development indicator. The indicator is composed of: the number of librarian and support staff per 100 students; the number of staff hours per 100 students; the number of hours library staff work per week per 100 students; the number of print volumes per student; the number of periodicals per 100 students; the number of electronic reference titles per 100 students; and the library expenditure per student.
- Librarian Leadership indicator consists of the time spent by librarians meeting with the principal, serving on standards and curriculum committees, holding meetings of library staff, and participating in faculty meetings.
- The Librarian Collaboration indicator involves the following activities: teaching cooperatively with teachers, identifying materials for teachers, teaching information literacy to students, providing in-service training to teachers, and managing

information technology.

- The Technology indicator addresses the availability of technology (in the library and linked to library resources) and access to the Internet and to licensed online databases.

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The study documented that at the elementary school level, the Leadership and Collaboration indicators were significantly correlated with each other as were the Program Development and Technology indicators. At the secondary school level, the Leadership and Collaboration indicators were correlated as was the Program Development indicator with the variable denoting flexible scheduling. The indicators at the secondary level showed a significant correlation with students' CSAP scores but the correlation coefficients were low. At the elementary school level only the Collaboration indicator showed a significant, but low, correlation with students' CSAP scores.

As in other studies, students' socio-economic status, represented through the percent of students eligible for National School Lunch Program and the percent of minority students, were the most powerful predictors of performance on the CSAP. Among the four library indicators, the Program Development indicator contributed the most to the explanation of student performance on CSAP. At the elementary school level, Program Development explained 7.5 percent of the variance on CSAP; the two socio-economic variables explained 43 percent. At the secondary level, the Program Development indicator explained 1.6 percent of student CSAP scores; the socio-economic variables explained 74 percent of the variance.

The Pennsylvania study (*Measuring Up to Standards*), conducted earlier (published in February 2000) by Lance, Rodney, and Hamilton-Pennell, used the reading scores of the Pennsylvania System of School Assessment (PSSA) as a measure of student performance. The study found that schools with average and above average PSSA scores had a larger percent of libraries staffed by a librarian and support staff than schools with below average PSSA scores. The study also identified a series of library variables as predictors of PSSA scores. These variables included library expenditures per student, number of print volumes per student, number of periodical subscriptions, CD ROM reference titles, number of library networked computers, number of computers with access to library databases, and number of computers with Internet access, and the integration of information literacy. The presence of a librarian and support staff yielded higher correlation coefficients with these variables than the presence of a librarian alone. The presence of a librarian with support staff also showed a significant, although low, correlation with PSSA scores at all educational levels even when controlled for school and community socio-economic variables, school size, per pupil expenditures, teacher pupil ration, percent of teachers with master's degrees, teachers years of experience, and teacher average salary.

The study identified that libraries in schools with higher test scores had more staff and more information technology, and did more to integrate information literacy into the curriculum. The rise of library staffing, information resources, and information technology was followed by an increase in the involvement of school librarians in teaching teachers and students how to find and assess information. In schools with higher PSSA scores, classrooms, labs, and other instructional sites were linked with the library via computers. Schools with higher PSSA scores had more computers that teachers and students could utilize to access the Internet and licensed databases. In schools with higher PSSA scores librarians spent more time teaching cooperatively with teachers, teaching information literacy skills, providing in-service training to teachers, managing information technology, meeting with principals, and serving on standards and curriculum committees.

The Alaska study (*Information Empowered*), conducted in 1999, demonstrated that schools with higher scores on version 5 of the California Achievement Tests (CAT5) tended to have libraries with a full-time librarian rather than a part-time librarian. These libraries were able to offer longer hours of service, higher levels of library staff activity, and higher student usage. Staff levels were strongly associated with levels of staff activity and resulted in more hours devoted to the delivery of information literacy instruction to students, cooperative planning of instructional units with teachers, and the provision of in-service to teachers and other school staff. Schools with higher test scores tended to be associated with libraries where librarians devoted more time to these activities. Libraries in schools with higher test scores had a cooperative relationship with the public library; had computers that provided online access to information, and had a collection development policy that addressed the reconsideration of challenged materials.

Using the Massachusetts Comprehensive Assessment System (MCAS) scores as a measure of student performance, a recent Massachusetts study (*School Libraries and MCAS Scores*) conducted by James C. Baughman showed that at all levels--elementary, middle/junior high, and high school—schools with library programs have higher MCAS scores than schools without library programs. Schools with more (high) library resources have higher MCAS scores than schools with fewer (low) library resources. Even in schools with a high percent of students on free lunch (defined as 15 percent or more of such students), schools that have libraries with more resources had higher MCAS scores than schools with libraries that have fewer resources. The study identified a series of library variables that differentiated between schools with higher and lower MCAS scores. These variables included: library hours of operation, books-per-pupil, expenditure-per-student, periodical and newspaper resources, presence of a full-time librarian, presence of support staff, availability of volunteers, student visits to the library per week, percent of students visiting per week, and alignment with state curriculum resources.

At all educational levels, the percent of students on free lunch was the most powerful predictor of student performance. In elementary schools that responded to the Massachusetts survey, books-per-pupil, presence of a full-time librarian, and automation explained 7.3 percent of the variance in student performance; percent of students on free lunch explained 63.3 percent of the variance. At the middle/junior high school level, books-per-pupil and full-time librarian contributed 4.5 percent to the explanation of student performance; percent of students on free lunch contributed 75.6 percent. At the high school level, books-per-pupil, presence of a full-time librarian, and hours of paid support staff explained 1.5 percent of student performance; percent of students on free lunch explained 58.7 percent.

The Massachusetts study used categorical variables (high/low; yes/no) in its analyses, comparing schools with libraries that have more resources to schools with libraries that have fewer or no resources or have no libraries. The analyses, particularly at the elementary school level, involved only a portion of the libraries that did respond to the survey (39 percent to 77 percent) rather than all the responding libraries. The researcher gave no explanation as to whether the portions of responding libraries not included in these analyses did not have data or whether the exclusions were due to other reasons. This, however, further limits the confidence with which the findings can be generalized not only to the entire sample of responding libraries but to libraries statewide, given that only 29 percent of the libraries provided information.

The association between library resources and activities and student performance as measured on state tests has been documented in library and educational research. Research has consistently shown that schools with well-staffed and well-resourced libraries and with librarians acting effectively in their role as program administrators, teachers/trainers, and information technology access providers have higher scores on state tests.

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App. A

2. Study Methodology

The Texas study followed the methodology used by Lance, Rodney, and Hamilton-Pennell in the Colorado, Alaska, and Pennsylvania studies while also attempting to expand upon those procedures.

2.1 Questionnaire

The questionnaire used in the Texas study was similar to the questionnaire used in the Colorado, Alaska, and Pennsylvania studies with some modifications. The questionnaire consisted of nine sections.

The first section—**Identifying Information**—requested the name of the school and district, school level, grade levels, whether the school has more than one library, and in case it does the library for which information is being provided.

Section II—**Library Management**—dealt with library size (i.e. seating capacity), availability of a district library coordinator, existence of a summer reading program, and the relationship with the local public library as manifested in on-going communications with the local public library and in working cooperatively to promote summer reading programs. This section also inquired into the existence of a library policy and procedures manual and board approved policies relating to copyright and to collection development, especially in regard to materials selection, weeding, and reconsideration of challenged materials.

Section III—**Library Staff**—addressed the staffing levels of the library including paid professional staff and paid support staff as well as adult and student volunteers. Information sought for each staffing category involved number of staff and volunteers, number full-time and part-time, person hours per week, and the highest education and certification of paid staff members.

Section IV—**Service Hours**—inquired into the number of hours in a typical week the library is open during school hours, before school, and after school, as well as in the summer.

Section V—**Staff Activities**—listed 18 different types of activities librarians are likely to perform. The activities were grouped into three categories: teaching and learning, information access and delivery, and program administration. Librarians were asked to record the number of hours in a typical week that all paid library staff spend on each activity.

Section VI—**Library Use**—addressed a range of library uses in a typical week. Uses included scheduled and unscheduled visits to the library by individuals and group of students, staff, administrators, and parents and the percent of regularly scheduled and flexibly scheduled visits. Data were also requested on the number of books and materials checked out and used in the library and the number of materials loaned to and from other libraries in the district and outside the district.

Section VII—**Library Technology**—inquired into the availability of computers with different types of functionality located in or under library supervision. Categories of computers included, for example, those with Internet connection, with access to the library catalog, library databases, and with networked access to CD-ROM resources. Information for those categories of computers was also requested for computers in school from which networked library resources may be accessed. Questions in this section also addressed the number of PCs and Macs by processor speed, speed of fastest Internet connection, Internet policy, and type of technology equipment in the library.

Section VIII—**Library Collection**—revolved around the characteristics and size of the library's print and non-print collection and the type and number of purchases made in 1999-00. Questions inquired into the size of seven categories of library materials: print volumes, print subscriptions to newspapers and magazines, electronic subscriptions, encyclopedias and reference titles on CD-ROM or laser disc, video materials, and software packages. Data were also requested on the type of online licensed databases library has, teacher and student access to these licensed databases from their home computers, and library participation in a system for the evaluation of print and non-print materials.

Section IX—**Library Operational Expenditures and Capital Outlay**—asked for 1999-00 budget information pertaining to books, newspapers and magazines, electronic format materials, non-print materials (e.g. audio, video, and microform), electronic access to information, other operating expenditures, and the library's capital outlay including equipment and capital purchases such as furniture and shelving.

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2.2 Sample

According to the Texas Education Agency (TEA), there are 7,467 schools in Texas.

Table II.1 – Texas Public Schools

School Type	Number of Schools	Percent of Schools
Elementary schools	4,006	53.6
Middle/Junior high schools	1,419	19.0
High schools	1,569	21.0
Elementary-Secondary schools	473	6.3

The sample selected for this study was stratified by educational level. The sample consisted of four strata, as listed in the adjacent table. The size of each stratum was proportional to its relative size among the total number of schools in Texas. Within each stratum, schools were selected at random.

A total of 600 schools were selected. The schools selected included:

Table II.2 – Sample

School Type	Number of Schools in Sample	Percent of Schools in Sample
Elementary schools	327	54.5
Middle/Junior high schools	120	20.0
High schools	139	23.2
Elementary-Secondary schools	14	2.3

Questionnaire packets were mailed to 600 librarians on August 29, 2000. The questionnaire packets included a cover letter, a copy of the questionnaire, and a self-addressed and stamped return envelope. A reminder postcard was mailed out to non-respondents on October 10, 2000. In addition, library administrators were contacted via e-mail and asked to communicate with librarians in their district who were in the sample to encourage them to respond. Similarly, regional Educational

Service Centers contacts and librarians subscribing to the Texas Library Connection (TLC) listserv were asked to encourage sampled librarians in their region to complete and return the questionnaire by mail, fax, or e-mail. During the last week of October and the first week of November 2000, each of the non-responding librarians was contacted by telephone and asked to respond.

Responses were obtained from 503 librarians, yielding an 84 percent response rate. As shown in the table below, the responding libraries were highly representative of both the sample and the universe of schools in Texas.

Table II.3 – Schools by Type and Response Rates

School Type	Universe		Sample		Respondents	
	#	%	#	%	#	%
Elementary schools	4,006	53.6%	327	54.5%	271	53.9%
Middle/Junior high	1,419	19.0%	120	20.0%	98	19.5%
High schools	1,569	21.0%	139	23.2%	124	24.6%
Elementary-Secondary schools	473	6.3%	14	2.3%	10	2.0%
Total number of schools	7,467	100.0%	600	100.0%	503	100.0%

Of the 503 schools that responded to the survey,

- 267 (53.1 percent) had Grade 4
- 104 (20.7 percent) had Grade 8
- 129 (25.6 percent) had Grade 10

These schools were included in the analysis.

2.3 Texas Education Agency Data

In addition to the survey data provided by school librarians, school and district data were obtained for the schools in the sample from the Texas Education Agency (TEA) through its Public Education Information Management System (PEIMS). Data were obtained in four areas:

- District and school financial characteristics
- Staff characteristics
- Student characteristics
- Academic performance

The data obtained from the Texas Education Agency is detailed in the table depicting the conceptual design of the study.

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2.4 Community Data

Data were also obtained from the Federal Reserve Boards' Federal Financial Institutions Examination Council (FFIEC) web site on community economic characteristics for each of the schools in the sample. The FFIEC web site has Census information on income, population, and housing at the Census Tract/BNA level. The site allows the user to extract respective data for a particular geographic location, in this case a school, through a two-stage process. First, by entering a street address, town/city, state and zip code data for the school, the user is able to identify the specific Census tract and BNA. Entering the tract and BNA information generates data on

- Median family income
- Percent of population below the poverty line
- Percent of minority population

Data not available through the FFIEC web site on some of the schools were extracted from the U.S. Census American Factfinder module at www.census.gov. Median family income data and percent population below poverty line data were based on the 1990 Census. These data were adjusted to the year 2000 using an index multiplier that accounts for the intervening changes in the Consumer Price Index (CPI) and the Cost of Living Adjustment (COLA) used by the Social Security Administration.

2.5 Study Design

The conceptual design of the study is three-tiered. It consists of:

- Spheres of influence

  The study has three spheres of influence:

  The library itself
  The school where the library is located
  The community in which the school is located

- Indicators

Indicators are elements that stipulate whether the respective sphere of influence should have a positive effect on students' academic performance. For example, a well-staffed library is an indicator of a good library program that would be more likely to encourage and facilitate academic performance than a poorly staffed library.

The indicators delineated for the library sphere of influence include:

Policies and procedures
Facilities
Hours of operation
Staff
Staff activities
Collaboration with public library
Library usage
Library material resources
Technology resources
Library budget

The indicators defined for the school sphere of influence include:

School and district financial characteristics
School staff
Student characteristics
Performance on TAAS

The indicator specified for the community sphere influence include:

Economic characteristics

- Measures

Measures are objective elements describing the indicator. For example, staffing levels, types of staff, hours of work, and staff qualifications are measures of a well- staffed library. The study consisted of over 200 measures.

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The spheres of influence, indicators, and measures are presented in the following table.

Table II.4 – Spheres of Influence, Indicators and Measures

Spheres of Influence	Indicators	Measures
Library		
	Policies and Procedures	
		Preparation and submission of library budget
		Board approved copyright policy
		Board approved collection development policy
		Materials selection policy
		Weeding policy
		Reconsideration for challenged materials policy
		Library policy and procedures manual
		Materials evaluation system
		Internet access policy
	Facilities	
		Seating capacity per 100 students
	Hours of Operation	
		Number of hours library is open per week, before, during and after school
	Staff	

		Number of professional librarians per 100 students
		Hours spent by professional librarians per week per 100 students
		Number of support staff per week per 100 students
		Hours spent by support staff per week per 100 students
		Number of adult and student volunteers per 100 students
		Hours spent by volunteers per week per 100 students
		Academic degrees and certifications of professional librarians and support staff
	Staff Activities: type and amount of time devoted to activity per week	
		Planning instructional units with teachers
		Teaching cooperatively with teachers
		Providing staff development to teachers and staff
		Assisting individuals and groups access and utilize state initiative information
		Identifying materials for instructional units developed by teachers
		Providing information skills instruction

		Providing reading incentive activities
		Managing library technology
		Administrating electronic reading programs
		Meetings with curriculum, technology, planning committees, taskforces or teams
		Meeting with principal/administrators
		Meeting with library staff in or outside district
		Attending faculty meetings
		Performing basic library activities
	Collaboration with Public Library	
		On going communications
		Cooperative summer reading program
	Library Usage	
		Number of visits by individuals per week per student
		Number of visits by groups per week per 100 students
		Number of individual information skills instruction contacts per week per students

		Number of group information skills instruction contacts per week per 100 students
		Number of materials checked out and used in the library per week per student
		Number of inter-library loans per week
		Percent of classes visiting library per week that are flexibly/regularly scheduled
	Library Material Resources	
		Number of print volumes per student
		Current subscriptions to newspapers and magazines per 100 students
		Number of electronic subscriptions
		Number of encyclopedias and reference titles on CD-ROM per 100 students
		Video materials per 100 students
		Software packages for use in library per 100 students
	Technology Resources	
		Number of computers in or under library supervision per 100 students
		Number of computers in or under library supervision connected to Internet
		Number of computers in or under library supervision with different characteristics

		Same measures for computers in school that can access networked library resources
		Speed of Internet connection
		Availability of other technology resources in library: automated catalog, automated circulation system, CD ROM server, video projector, etc.
	Library Budget	
		Operating expenditures by category per student
		Capital outlay expenditures per student
School		
	School and District Financial Characteristics	
		Campus operating budget
		Percent allocated to instruction
		Operating budget per student
		District percent payroll costs
		District percent professional and contracted
		District percent supplies and materials
		District percent other operating
		District percent debt service

		District percent capital outlay
	School Staff	
		Total number of full-time staff
		Total number of full-time teachers
		Percent of minority full-time staff
		Average salary of support staff
		Average salary of administrators
		Average salary of teachers
		Average years of teachers experience
		Percent of full-time teachers with MS degrees
		Percent of full-time teachers with Ph.D degrees
		Teacher student ratio
		Teacher turnover ratio
	Student Characteristics	
		Number of students
		Percent of white students
		Percent of African American students
		Percent of Hispanic students
		Percent of students with limited English proficiency (LEP)

		Percent of economically disadvantaged students
		Students' mobility rate
		1999 attendance rate
		Annual dropout rate
		4-Year longitudinal dropout rate - 1999
		4-Year 1999 high school graduation rate
		4-Year 1999 post-secondary continuation
	Performance on TAAS	
		TAAS participation rate
		Reading TAAS
		Math TAAS
		Writing TAAS
		Passed all TAAS sections
		Percent who took ACT/SAT
		Percent in district who took advanced placement/International Baccalaureate
Community		
	Economic Characteristics	
		Median family income

		Percent of minority population
		Percent in poverty

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2.6 Statistical Analysis

The data were analyzed separately for elementary, middle/junior high schools, and high schools. A variety of statistical analyses were used.

Tests of Statistical Significance

Tests of significance are conducted to determine whether the results are representative of the entire universe (i.e. all school libraries in Texas) rather than of the sample of libraries. Tests of statistical significance are reported as probability (designated by a "p"). Typically, probability is reported as $p<.05$, $p<.01$, and $p<.001$. A probability of $p<.05$ refers to a 95 percent certainty; $p<.01$ refers to a 99 percent certainty; and $p<.001$ refers to 99.9 percent certainty that the results are representative.

Tests of significance are reported in association with Pearson product-moment correlation coefficients in a bivariate correlation.

Bivariate Correlation

A bivariate correlation examines the strength and direction of a relationship between two variables. The bivariate correlation coefficient shows the degree to which variation in one variable is related to variation in the second variable. Pearson's correlation coefficient (designated as "r") ranges from –1.00 to +1.00. A negative r value points to a negative relationship between the two variables: that is, as one variable increases the second variable declines. A positive r value points to a positive relationship between the two variables; that is, an increase in one variable is associated with an increase in the second variable. The report of the r value of the relationship between two variables also includes an indication of its statistical significance.

In addition, r-squared, which ranges from 0 to 1.00 measures the proportion of variance in one variable that is explained by the other variable.

Partial Correlation

Partial correlation is a single measure of association describing the relationship between two variables while adjusting for the effects of one or more additional variables. Partial correlation helps identify variables that may affect the relationship between two variables and allows us to remove their effect from the relationship between the two variables. The assumption underlying partial correlation is that the relationship between these variables is linear. By identifying such intervening variables, partial correlation helps to determine causality.

Factor Analysis

Factor analysis is used to (1) to explore and detect patterns of variables; (2) to confirm hypotheses about the structuring of variables; and (3) to construct indices for use as new variables. Factor analysis is useful for establishing the relationship among groups of related variables that were measured on different scales (for example, percentage and dollars).

Factor analysis reports the loading of each variable on a factor and its direction. A high loading signifies the weight given to a variable. In addition, factor analysis determines the percent of variance accounted for by each factor.

Regression

Multiple regression analyzes the relationship between a dependent variable (e.g. percent of students who met minimum expectations on TAAS reading) and two or more independent variables (e.g. library print resources, electronic resources, hours of operation, staff activities). Multiple regression helps evaluate the contribution of a specific variable or set of variables, find a structural relationship, and provide an explanation for complex relationships among multiple variables. Through multiple regression we can obtain a prediction equation; find out how accurate it is; and determine what percent of the variance in the dependent variable is accounted for by each of the independent variables. It also helps us simplify the prediction equation by deleting those independent variables that do not add substantially to prediction accuracy once certain independent variables are included

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2.6.1 Analysis Limitations and Difficulties

The study attempted to establish the strength of the relationship between library resources and activities and students' performance on TAAS and identify those library variables that contribute most to students' TAAS performance. Students' performance on the TAAS, the study's dependent variable, was measured by the percent of students who met minimum expectations on TAAS reading.

Little Variance on TAAS. A significant limitation identified in the study involves the limited variance in the performance of students on TAAS (i.e. percent of students who met minimum expectations on TAAS reading). Basically, in 13 to 16 percent of the schools in the three samples, 80 percent or less of the students met the minimum TAAS expectations. In 46 to 54 percent of the schools, 91 percent or more of the students met minimum expectations. For example:

- In the sample of elementary schools:

  In seven percent of the schools, 70 percent or less of the students met minimum TAAS expectations;

  In eight percent of the schools, 71 to 80 percent of the students met minimum TAAS expectations;

  In 31 percent of the schools, 81 to 90 percent of the students met minimum TAAS expectations; and

  In 54 percent of the schools, 91 to 100 percent of the students met minimum TAAS expectations.

- Similarly, at the middle/junior high school level:

  In three percent of the schools, 70 percent or less of the students met minimum TAAS expectations;

  In 13 percent of the schools, 71 to 80 percent of the students met minimum TAAS expectations;

  In 37.5 percent of the schools, 81 to 90 percent of the students met minimum TAAS expectations;

  In 46 percent of the schools, 91 to 100 percent of the students met minimum TAAS expectations.

- In the high school sample:

  In four percent of the schools, 70 percent or less of the students met minimum TAAS expectations,

  In nine percent of the schools, 71 to 80 percent of the students met minimum TAAS expectations,

  In 34 percent of the schools, 81 to 90 percent of the students met minimum TAAS expectations, and

  In 52 percent of the schools, 91 to 100 percent of the students met minimum TAAS expectations.

Table II.5 – TAAS Pass Rates

Percent of Students Who Passed TAAS	Elementary Schools		Middle/Junior High Schools		High Schools	
	# (267)	%	# (104)	%	# (129)	%
60 percent or less	6	2.2%	1	1.0%	2	1.5%
61 to 65 percent	6	2.2%	--	--	1	0.8%
66 to 70 percent	6	2.2%	2	1.9%	2	1.5%
71 to 75 percent	9	3.4%	5	4.8%	3	2.3%
76 to 80 percent	12	4.5%	9	8.6%	9	7.0%
81 to 85 percent	27	10.1%	13	12.5%	13	10.1%
86 to 90 percent	57	21.3%	26	25.0%	31	24.0%
91 to 95 percent	72	27.0%	30	28.8%	37	28.7%
96 to 99 percent	57	21.3%	13	12.5%	22	17.0%
100 percent	15	5.6%	5	4.8%	9	7.0%

The low degree of variance in the percent of students who met minimum expectations on TAAS at all educational levels significantly limits the usefulness of this variable, the study's key dependent variable. In addition to the limited/lack of variance, the percent of students who meet minimum expectations on TAAS constitutes a "unrefined" measure, since it gives all students who passed minimum requirements the same weight without differentiating among them by the extent to which they surpassed minimum expectations.

Little Variance in Library Variables. The relationship between a variable and TAAS performance can vary depending on the value of the variable. For example, if all libraries operate either with insufficient staffing or with excess staffing ranges, it will appear as if there is no relationship between library staffing and TAAS performance when, in reality, there is no relationship at current staffing levels. If school libraries were staffed at the effective staffing range associated with the number of students, then a strong relationship between the two may emerge.

Little variation in a variable can affect the analysis of results also in another way. If the variation in a variable is small, small variations in student TAAS performance that result because of changes in that variable may be difficult to distinguish from the noise resulting from measuring TAAS performance. A statistical analysis of the variable may indicate a statistically insignificant correlation when a correlation does exist. The potential for this type of difficulty can be diagnosed by reviewing the distribution of the individual variables and comparing that distribution to the range of feasible variation.

For example, all elementary schools in our sample reported the presence of at least one professional librarian. Consequently, this survey does not support testing of whether the presence of a librarian has a positive effect on TAAS performance.

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Establishing Cause and Effect. Establishing cause and effect through statistical analyses is a difficult and multi-step process. A first step in this process is to establish that certain variables are correlated. The following steps are to determine the effect these variables have on TAAS performance; provide a theoretical, research-based or intuitive basis for these relationships; and from this infer the likelihood of a cause-and-effect relationship.

For example, a statistical analysis can indicate that performance on TAAS at a school is positively correlated with the average number of items per student checked out from the library. This correlation, however, can not determine whether a high percent of students who meet minimum expectations on TAAS at a school leads to greater library usage (because highly performing students enjoy reading more) or whether greater library usage results in a higher percent of students meeting minimum TAAS expectations (because students are more exposed to an environment that encourages greater levels of academic performance). This difficulty of interpreting the reason for a correlation is compounded by the fact that the correlations themselves can be interpreted in different ways.

Similarly, students' TAAS performance may be positively correlated with the number of adult volunteers working in a library either because

a. Adult volunteers augment the library staff thereby allowing the librarian to devote more time to teaching and training activities that lead to student learning and contribute to TAAS performance, or
b. Adult volunteers in the library are more likely to be present in

> communities that are actively interested in education, and academic performance is encouraged in the home.

If the first explanation is accepted, then establishing programs to encourage adult volunteers (or to raise staffing levels in other ways) will result in a higher percent of students meeting minimum expectations on TAAS. If the latter explanation is accepted, the involvement of adult volunteers in the library will have little effect.

The primary tool we have used to address this issue, was the a priori breakdown of the measures that might affect TAAS performance into the sphere of influence-indicator-measure hierarchy. This breakdown helped us examine a variety of different factors that could result in erroneous conclusions.

Other difficulties with a cause and effect analysis involve situations of the following nature. Principals in low performing schools may respond to the situation by instituting measures to improve TAAS performance by increasing library staff, enriching the library collection, installing technology in the library and throughout the school, and encouraging collaboration between librarians and teachers. From a statistical point of view, such actions mean that measures to increase TAAS performance correlate with low performance, because these measures are in place at schools with low TAAS performance levels as well as at schools with high levels of TAAS performance. Situations like these can result in analyses that are less discriminating and more difficult to interpret.

Uncorrelated, But Complementary, Measures. Most of the library measures included in this study do not have a direct effect on TAAS performance. Instead, these measures have a direct effect on one or more indicators, which have a direct effect on performance. For example, good library staff, which is an indicator of a program that encourages higher performance, is expected to have a direct effect on performance, while staffing levels and qualifications, which are measures of a good staff, have an indirect effect by helping build a good staff.

Masked Correlations. The influences considered in this study were identified on the basis of previous research and recent studies. The library is the primary focus of this study. The school and community spheres of influence are used primarily to control for non-library factors that could mask the influence of the library factors. For example, the school size and TAAS performance are not significantly correlated. However, school size correlates with limited English proficiency, which has a strong negative influence on TAAS performance. By controlling for limited English proficiency, the correlation between school size and TAAS performance becomes significant.

Non-linear, Single-variable Correlations. Some variables may affect TAAS performance in a non-linear manner. For example, library staffing that is below the level required for general library maintenance could result in librarians with little time to work with students and teachers. For staffing levels below this cutoff, further staff decreases will have little affect on TAAS performance because the library staff is already unable to contribute directly to performance. As staffing levels increase beyond this cutoff, librarians have more time to work with students and teachers on activities that affect TAAS performance and increases in staff should result in greater levels of student performance. Above a certain level, the effect of staff levels on student TAAS performance will decrease because the library staff already has sufficient time to implement important activities, and any additional staff will have trouble finding new activities that will impact student performance. In fact, the resources spent on additional library staff at these levels could result in decreased student performance because the resources allocated to excess library staff were probably taken from other resources that might positively affect student performance.

Non-linear, Multi-variable Correlations. It is possible that some variables have little effect on TAAS performance by themselves, but do have an affect on performance when taken together with other variables.

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App. A

III. SCHOOL LIBRARY STANDARDS AND LIBRARY PERFORMANCE

The Texas State Library and Archives Commission (TSLAC), in consultation with the State Board of Education, adopted standards for school library services. The Texas Education Code 33.021 sets forth that "A school district shall consider the standards in developing, implementing, or expanding library services." The School Library Programs: Standards and Guidelines for Texas address five components:

- Library program management
- Library learning environment
- Curriculum integration
- Resources
- Facilities

The standards and guidelines are applied at four levels: exemplary, recognized, acceptable, and below standard.

School Library Programs: Standards and Guidelines for Texas are available in electronic format at http://www.tsl.state.tx.us/ld/school/libs/standards.html

1. Library Program Management

1.1 Staffing

Library staffing levels recommended by the School Library Programs: Standards and Guidelines for Texas are based on school size (number of students). The standards divide schools into six size categories and specify staffing ranges for each category.

- Library staff in schools with an enrollment of up to 350 students should range from one certified librarian to one certified librarian and one para-professional.
- Library staff in schools with an enrollment of 351 to 700 students should range from one certified librarian and .5 para-professional

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to one certified librarian and 1.5 para-professionals.

- Library staff in schools with an enrollment of 701 to 1,050 students should range from one certified librarian and one para-professional to a staff of two certified librarians and two para-professionals.
- Library staff in schools with an enrollment between 1,051 and 1,400 students should range from one certified librarian and two para-professionals to a staff of two certified librarians and three para-professionals.
- Library staff in schools with an enrollment of 1,401 to 2,000 students should range from two certified librarians and two para-professionals to three certified librarians and four para-professionals.
- Library staff in the largest schools, those with an enrollment of over 2,000 students, should add one additional librarian and 1.5 para-professional staff for every 700 students.

1.1.1 Elementary School Library Staff

Library staffing levels varied by educational level. At the elementary school level, libraries had on average one librarian and 0.67 para-professional staff (referred to in this report as library aides) for a total of 1.67 staff members. Thirty-eight percent of the elementary school libraries in the sample had only one staff member, 55 percent had two staff, and six percent of the libraries had three or more staff members. On average, library staff worked 61.5 hours per week: certified librarians worked 38.8 hours a week and library aides worked 22.7 hours per week. In addition to certified librarians and library aides, elementary school libraries also used adult and student volunteers in the library. Fifty percent of the libraries used adult volunteers and 32 percent used student volunteers. On average, libraries with adult volunteers had 4.4 volunteers working 12.9 hours a week in the library. Libraries with student volunteers had, on average, 3.8 student volunteers working 7.3 hours per week in the library. Elementary schools in the sample ranged from less than 100 to 1,376 students.

Table III.1 - Elementary School Library Staff

Staff	Means/Percent
Number of librarians	1.01
Number of library aides	0.67
Number of library staff	1.68

Percent of libraries with one staff member	38.5%
Percent of libraries with two staff members	55.8%
Percent of libraries with three or more staff	5.7%
Librarians' person hours per week	38.8
Library aides hours per week	22.7
Library staff person hours per week	61.5

Nine percent of the elementary schools in the sample had enrollment of up to 350 students. All these libraries had a librarian, although 83 percent of these libraries had a full-time librarian. Thirty-seven percent also had library aides.

Fifty-six percent of elementary schools in the sample had between 351 to 700 students. Ninety-three percent of the schools had a full-time librarian. About 30 percent of these schools had full-time library aides; eight percent had part-time library aides.

One-third of elementary school libraries had between 701 and 1,050 students. Ninety-eight percent of the schools had a full-time librarian; 61 percent had full-time library aides and 11 percent had part-time library aides. The libraries in this school size category fell short of the staffing levels recommended by the standards and guidelines especially with regards to library aides levels.

About two percent of elementary schools had 1,051 to 1,400 students. All had one full-time librarian; 60 percent had one or two full-time library aides. The libraries in this school size category fell short of the staffing levels recommended by the standards and guidelines.

Table III.2 – Elementary School Size, Standards, and Library Staff

Elementary School Size	Number/ Percent of Schools (266)	Acceptable to Exemplary Minimum Program Level for Staffing per Campus in School Library Standards	Number of Staff	Librarians	Library Aides

				Full-time	Part-time	Full-time	Part-time
Up to 350	24 9.0%	1 certified librarian to 1 certified librarian + 1 aide	1	20 83.3%	4 16.7%	6 25.0%	2 8.3%
			2	--	--	1 4.2%	--
351 to 700	148 55.6%	1 certified librarian + .5 aide to 1 certified librarian + 1.5 aides	1	137 92.6%	9 6.1%	61 41.2%	23 15.5%
			2	--	2 1.3%	3 2.0%	3 2.0%
701 to 1,050	89 33.5%	1 certified librarian + 1 aide to 2 certified librarians + 2 aides	1	87 97.7%	1 1.1%	51 57.3%	10 11.2%
			2	--	1 1.1%	3 3.4%	--
1,051 to 1,400	5 1.9%	1 certified librarian + 2 aides to 2 certified librarians + 3 aides	1	5 100.0%	--	2 40.0%	--
			2	--	--	1 20.0%	--

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To measure the role and effect of library staff on library performance, library staffing levels and hours were examined at "per 100 students." For each staff category, the number of staff and the number of hours these staff worked per week were correlated with a set of library variables. Please note that all significant correlation coefficients in the report are 1-tailed unless otherwise specified.

Libraries' staffing resources were significantly and positively associated with the size of the libraries' collection, technology, and budgetary resources. Libraries with more librarians per 100 students also have:

- A larger operating budget per student
- More library print resources such as subscriptions to newspapers and magazines per 100 students
- More technology resources in or under library supervision per 100 students, including:

    Number of computers in the library
    Library computers on a Local Area Network (LAN)
    Library computers with CD ROM drives

Table III.3 – Elementary School Librarians Correlations

Correlation	Elementary School Librarians Per 100 Students *Pearson Correlation (r)* *Significance (p)* *Number (n)*	Elementary School Librarian Hours Per 100 Students *Pearson Correlation (r)* *Significance (p)* *Number (n)*
Library operational expenditures per student	.483 .000 258	.158 .005 258
Library Collection:		
Library subscriptions to newspapers and magazines per 100 students	.473 .000 258	.465 .000 258
Library Technology:		
Number of computers in or under library supervision per 100 students	.383 .000 263	.243 .000 263
Number of computers in or under library supervision on a Local Area Network	.294 .000 263	.432 .000 263

Number of computers in or under library supervision with CD ROM drives	.321 .000 263	.369 .000 263

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Librarians have to perform a wide range of activities beyond basic library duties such as checking materials in and out, shelving, processing, and retrieving materials. The Mission Statement of School Library Programs, and the State Board of Educator Certification Standards for School for Library Certificate, expect librarians to:

- Provide instruction to foster competencies in acquiring and using information and ideas, and in evaluating information resources.
- Stimulate interest in reading and appreciation of literature through group instruction and individual guidance.
- Provide intellectual and physical access to materials in multiple formats.
- Work with other educators to design and carry out learning experiences to meet the individual needs of students.

The presence of library aides and the number of hours they work are critical to librarians' ability to perform the range of activities specified by the standards and guidelines and the State Board of Educator Certification Standards for School Library Certificate. Library aides "free" the librarian from having to perform basic library activities and allow the librarian to allocate time to activities that are more directly related to teaching and training staff and students. The hours library aides work allows the librarian to be a leader and a recognized professional through involvement with teachers, administrators, and with other librarians. In addition, the extent to which library aides are available increases library usage by individuals and classes.

The presence of library aides was most strongly associated with activities such as:

- Meetings with principals and other school administrators
- Administrating electronic reading programs
- Managing library technology

Table III.4 – Elementary School Library Aides Correlations

Correlation	Elementary School Library Aides Per 100 Students *Pearson Correlation (r)* *Significance (p)* *Number (n)*	Elementary School Library Aides Hours Per 100 Students *Pearson Correlation (r)* *Significance (p)* *Number (n)*
Library operational expenditures per student	.369 .000 258	.158 .005 264
Meet with principal and other administrators	.216 .000 261	.374 .000 261
Administer electronic reading programs such as Accelerated Reader, Electronic Bookshelf	.210 .000 261	.351 .000 261
Managing library technology	.161 .005 261	.287 .000 261

To expand their staffing resources, elementary school libraries use volunteers. One-half of the elementary school libraries use adult volunteers and 32 percent use student volunteers. On average, elementary school libraries with adult volunteers utilize 4.4 adult volunteers, and libraries with student volunteers utilize about four student volunteers in a typical week. In these libraries, volunteers work about 21 hours per week, an amount of time similar to the average amount of time worked by library aides. Volunteers expand staff hours by about one-third.

Table III.5 – Elementary School Library Volunteers

Library Volunteers	Means/Percent
Number of adult volunteers	4.4
Number of student volunteers	3.8
Number of library volunteers	8.2
Number of hours adult volunteers work per week	12.9

Number of hours student volunteers work per week	7.3
Total number of volunteer hours per week	20.7
Percent of libraries with adult volunteers	50.2%
Percent of libraries with student volunteers	32.2%

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Libraries that utilize adult and student volunteers are more likely to engage in a range of teaching and leadership activities, through librarian involvement with faculty, administrators and their professional colleagues and the management of technology resources. Volunteers, similarly to library aides, allow librarians and their aides to devote less time to basic library activities and focus attention on activities that are more directly related to student instruction.

1.1.2 Middle/Junior High School Library Staff

Middle/Junior high schools in the sample ranged in size from 104 to 1,686 students. On average, middle/junior high school libraries have 1.76 paid staff. Library staff consists, on average, of 1.05 librarians and .71 library aides. Thirty-six percent of the middle/junior high schools have one library staff member, 52 percent have two staff members, and 12 percent have three or more staff members. On average, library staff provide 65 hours of service per week: librarians provide 40 hours of service a week and library aides: 25 hours. In addition, 26 percent of the middle/junior high school libraries have adult volunteers and 60 percent have student volunteers. On average, middle/junior high school libraries with adult volunteers have 1.3 adult volunteers working four hours per week, and libraries with student volunteers have 7.2 student volunteers working 25.9 hours per week. In these libraries, volunteers work 32 hours per week.

Table III.6 - Middle/Junior High School Library Staff

Staff	Means/Percent
Number of librarians	1.05
Number of library aides	0.71
Number of library staff	1.76

Percent of libraries with one staff member	35.9%
Percent of libraries with two staff members	52.4%
Percent of libraries with three or more staff	11.6%
Librarians' person hours per week	40.2
Library aides hours per week	25.0
Library staff person hours per week	65.2

Twelve percent of the middle/junior high schools in the sample had enrollment of up to 350 students. All these libraries had a librarian, although only two-thirds had a full-time librarian. One-quarter also had library aides.

Thirty-two percent of middle/junior high schools in the sample had between 351 to 700 students. Ninety-seven percent of the schools had a full-time librarian. About 60 percent of these schools had aides: 45 percent had full-time library aides; 15 percent had part-time library aides. Libraries in this school size category fell short in the number of library aides recommended by the standards and guidelines.

Thirty-six percent of middle/junior high school libraries had between 701 and 1,050 students. All of the schools had a full-time librarian; 68 percent had library aides: 57 had full-time aides and 11 percent had part-time library aides. Libraries in this school size category fell short of the library aide levels recommended.

Fourteen percent of middle/junior high schools had 1,051 to 1,400 students. All had full-time librarians; 71 percent had one or two full-time library aides and seven percent had part-time aides. Libraries in this school size category fell short especially in the number of library aides.

Seven percent of the middle/junior high schools had 1,401 to 2,000 students. All had one or two full-time librarians; 14 percent also had a part-time librarian. All had one or two full-time aides; 14 percent also had one part-time aide. Libraries in this school size category fell short of the staffing levels recommended in the standards and guidelines.

Table III.7 – Middle/Junior High School Size, Standards, and Library Staff

Middle/Junior High School Size	Number/Percent of Schools (103)	Accenptable to Exemplary Minimum Program Levels for Staffing per Campus in School Library Standards	Number of Staff	Librarians		Library Aides	
				Full-time	Part-time	Full-time	Part-time
Up to 350	12 11.6%	1 certified librarian to 1 certified librarian + 1 aide	1	8 66.7%	4 33.3%	2 16.7%	--
			2	--	--	1 8.3%	--
351 to 700	33 32.0%	1 certified librarian + .5 aide to 1 certified librarian + 1.5 aides	1	32 97.0%	--	15 45.4%	5 15.1%
			2	--	--	--	--
701 to 1,050	37 35.9%	1 certified librarian + 1 aide to 2 certified librarians + 2 aides	1	37 100.0%	--	21 56.8%	4 10.8%
			2	--	--	--	1 2.7%
1,051 to 1,400	14 13.6%	1 certified librarian + 2 aides to 2 certified librarians + 3 aides	1	12 85.7%	--	9 64.3%	1 7.1%
			2	2 14.3%	--	1 7.1%	--
1,401 to 2,000	7 6.8%	2 certified librarians + 2 aides to 3 certified librarians + 4 aides	1	4 57.1%	1 14.3%	5 71.4%	1 14.3%

	2	3 42.9%	--	2 28.6%	--

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Middle/junior high schools with over 350 students fell short in their library staffing levels based on library staffing standards and guidelines. Insufficient library staffing has a negative effect on library use. The number of librarians and the number of librarian hours per 100 students were correlated with:

- Number of visits to the library by individuals
- Number of books and other materials checked out per student

That is, libraries with more librarians and librarian hours are able to accommodate visits by more students and facilitate more library activities represented by volume of materials checked out. The middle/junior high school librarian staffing levels were highly correlated with resources such as:

- Library's operational expenditures per student
- Print collection
- Library technology with networked access to CD ROM resources per 100 students

Middle/Junior high school libraries with more librarian resources also have larger collections, more technology resources, and are supported by larger operating budgets per student.

Table III.8 – Middle/Junior High School Librarians Correlations

Correlation with:	Middle School Librarians Per 100 Students *Pearson Correlation (r)* *Significance (p)* *Number (n)*	Middle School Librarian Hours Per 100 Students *Pearson Correlation (r)* *Significance (p)* *Number (n)*
Operational expenditures per student	.425 .000 100	.415 .000 100
Library Use:		

Number of visits to library by individual per student	.631 .000 101	.631 .000 101
Number of books and other materials checked out per student	.544 .000 101	.598 .000 101
Number of print volumes per student	.538 .000 103	.547 .000 103
Library Technology:		
Number of computers in or under library supervision with networked access to CD ROM resources per 100 students	.451 .000 101	.351 .000 101
Number of computers in or under library supervision with CD ROM drives per 100 students	.354 .000 101	.279 .002 101
Number of computers in or under library supervision per 100 students	.326 .000 101	.264 .004 101
Number of video materials per 100 students	.323 .000 103	.235 .008 103

Similar to elementary school libraries, middle/junior high school librarians with library aides are more likely to:

- Administer electronic reading programs
- Manage technology
- Meet with the principal and other school administrators
- Facilitate information skills instruction contacts with individuals

Table III.9 - Middle/Junior High School Library Aides Correlations

Correlation with:	Middle School Library Aides Per 100 Students *Pearson Correlation (r)* *Significance (p)* *Number (n)*	Middle School Library Aides Hours Per 100 Students *Pearson Correlation (r)* *Significance (p)* *Number (n)*
Administer electronic reading programs such as Accelerated Reader, Electronic Bookshelp	.455 .000 101	.467 .000 101
Meet with principal and other administrators	.409 .000 101	.423 .000 101
Manage library technology	.362 .000 101	.372 .000 101
Number of information skills instruction contacts with individuals per student	.400 .000 101	.424 .000 101

Having adequate library staff (librarians and aides) impacts most strongly library use, as reflected by:

- Visits to the library by individual students
- Information skills instruction contacts
- Books and materials checked out
- Administration of electronic reading programs

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Table III.10 - Middle/Junior High School Library Staff Correlations

Correlation with:	Middle School Library Staff Per 100 Students *Pearson Correlation (r)* *Significance (p)* *Number (n)*	Middle School Library Staff Hours Per 100 Students *Pearson Correlation (r)* *Significance (p)* *Number (n)*

Staff Activities:		
Administer electronic reading programs such as Accelerated Reader, Electronic Bookshelf	.369 .000 101	.393 .000 101
Library Use:		
Number of visits by individuals to library per student	.543 .000 101	.619 .000 101
Number of information skills instructions contacts with individuals per 100 students	.403 .000 101	.404 .000 101
Number of books and other materials checked out of library per 100 students	.348 .000 101	.407 .000 101
Library Collection:		
Print volumes per student	.483 .000 103	.528 .000 103

The use of volunteers in middle/junior high school libraries is less common than in elementary school libraries. One-quarter of the middle/junior high school libraries reported having adult volunteers and 60 percent reported having student volunteers. Volunteers are typically students. On average, these libraries have one adult volunteer and seven student volunteers who work 32 hours per week.

Table III.11 – Middle/Junior High School Library Volunteers

Library Volunteers	Means/Percent
Number of adult volunteers	1.3
Number of student volunteers	7.2

Number of library volunteers	8.5
Number of hours adult volunteers work per week	4.0
Nubmer of hours student volunteers work per week	25.9
Total number of volunteer hours per week	32.0
Percent of libraries with adult volunteers	26.0%
Percent of libraries with student volunteers	59.6%

The availability of volunteers in middle/junior high school libraries "frees" librarians to engage in activities such as teaching cooperatively with teachers, participating in curriculum, technology and planning committees, and meetings with library staff.

In middle/junior high school libraries with volunteers, librarians are more likely to engage in these activities.

1.1.3 High School Library Staff

Over three-quarters of high school libraries have two or more staff members. On average, high school libraries have 2.36 staff members. High school libraries have, on average, about one and one-half librarians and nearly a full-time library aide. Library staff work 89.5 hours in a typical week.

Table III.12 - High School Library Staff

Staff	Means/Percent
Number of librarians	1.40
Number of library aides	0.98
Number of library staff	2.36
Percent of libraries with one staff member	22.5%
Percent of libraries with two staff members	39.5%

Percent of libraries with three or more staff	38.0%
Librarians' hours per week	53.9
Library aides' hours per week	35.5
Library staff hours per week	89.5

One-quarter of the high schools in the sample had enrollment of up to 350 students. All these libraries had a librarian; 82 percent had a full-time librarian. Thirty-seven percent also had one or two library aides and 12.5 percent had part-time aides.

High school libraries with 351 or more students fell short in their staff based on library staffing standards and guidelines.

Twenty-one percent of high schools in the sample had between 351 to 700 students. Ninety-six percent of the schools had one or two full-time librarians and four percent had a part-time librarian. About 60 percent of these schools had aides: 41 percent had a full-time library aide; 18 percent had a part-time library aide. Libraries in this school size category fell short on the library aides staffing levels recommended by the standards and guidelines.

Ten percent of high school libraries had between 701 and 1,050 students. All of the schools had one or two full-time librarians; 77 percent had one or two full-time library aides and 15 percent had one or two part-time library aides. Libraries in this school size category fell short on the library aides staffing levels recommended by the standards and guidelines.

Eight percent of high schools had 1,051 to 1,400 students. All had one or two full-time librarians; 60 percent had one or two full-time library aides and 20 percent had part-time aides. Libraries in this school size category fell short on the library aides staffing levels recommended by the standards and guidelines.

Fifteen percent of the high schools had 1,401 to 2,000 students. All had one to three full-time librarians. However, only 32 percent had one full-time aide. Libraries in this school size category fell short on the staffing levels recommended for librarians and for library aides.

Twenty-two percent of the high schools had more than 2,000 students. All the schools had one to three full-time librarians. About 90 percent had one to four full-time aides. Libraries in this school size category fell short on the staffing levels recommended for librarians and for library aides.

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Table III.13 – High School Size, Standards, and Library Staff

High School Size	Number/Percent of Schools (129)	Accenptable to Exemplary Minimum Program Levels for Staffing per Campus in School Library Standards	Number of Staff	Librarians		Library Aides	
				Full-time	Part-time	Full-time	Part-time
Up to 350	32 24.8%	1 certified librarian to 1 certified librarian + 1 aide	1	26 81.2%	6 18.7%	11 34.4%	3 9.4%
			2	--	--	1 3.1%	1 3.1%
351 to 700	27 20.9%	1 certified librarian + .5 aide to 1 certified librarian + 1.5 aides	1	25 92.6%	1 3.7%	11 40.7%	5 18.5%
			2	1 3.7%	--	--	--
701 to 1,050	13 10.1%	1 certified librarian + 1 aide to 2 certified librarians + 2 aides	1	10 76.9%	--	9 69.2%	1 7.7%
			2	3 23.1%	--	1 7.7%	1 7.7%
1,051 to 1,400	10 7.7%	1 certified librarian + 2 aides to 2 certified librarians + 3 aides	1	6 60.0%	--	5 50.0%	2 20.0%
			2	4 40.0%	--	1 10.0%	--

1,401 to 2,000	19 14.7%	2 certified librarians + 2 aides to 3 certified librarians + 4 aides	1	4 21.0%	--	10 52.6%	4 21.0%
			2	14 73.7%	--	6 31.6%	–
			3	1 5.3%	--	–	–
2,001 to 3,395	28 21.7%	Add 1 certified librarian + 1.5 aides for every 700 students	1	4 14.3%	1 3.6%	10 35.7%	1 3.6%
			2	22 78.6%	--	14 50.0%	–
			3	2 7.1%	--	--	–
			4	--	--	1 3.6%	–

The presence of professional librarians and the number of hours they work per week are strongly associated with the size of the library's collection resources and extent of library use. High school libraries with more librarians per 100 students are likely to have a larger collection and a more up-to-date collection. Such libraries are also likely to have a higher level of library use as reflected by the number of visits to the library by both individuals and classes and the number of materials checked out. Furthermore, high school libraries with a higher level of staffing are also more likely to have a board approved collection development policy.

Table III.14 – High School Librarians Correlations

Correlations with:	High School Librarians Per 100 Students *Pearson Correlation (r)* *Significance (p)* *Number (n)*	High School Librarian Hours Per 100 Students *Pearson Correlation (r)* *Significance (p)* *Number (n)*

Operational expenditures per students	.353 .000 122	.403 .000 122
Board approved collection development policy	.329 .000 129	.347 .000 129
Library Use:		
Number of visits to library by individual per student	.536 .000 125	.469 .000 125
Percent of regularly scheduled visits to library by classes	.176 .025 125	.451 .000 125
Number of books and other materials checked out per student	.640 .000 125	.637 .000 125
Library Collection:		
Number of print volumes per student	.778 .000 128	.617 .000 128
Number of newspaper and magazine subscriptions per 100 students	.793 .000 128	.660 .000 128
Number of volumes purchased in 99-00 per 100 students	.471 .000 105	.394 .000 105
Number of medicine and health volumes purchased in 99-00 per 100 students	.446 .000 110	.262 .003 110

In-library software packages per 100 students	.268 .001 128	.344 .000 128

Typically, high school libraries have one full-time aide. The number of library aides per 100 students, similar to the librarian staffing levels, are strongly associated with the size and up-to-date nature of the library collection. High school libraries with more library aides per 100 students are likely to have larger collections and collections that are up-to-date. Such libraries tend to have larger capital outlay budgets per student. The presence of library aides is also associated with greater library use per student as reflected in the number of materials checked out and in visits to the library.

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Table III.15 – High School Library Aides Correlations

Correlation with:	High School Library Aides Per 100 Students *Pearson Correlation (r)* *Significance (p)* *Number (n)*	High School Library Aides Hours Per 100 Students *Pearson Correlation (r)* *Significance (p)* *Number (n)*
Staff Activities:		
Managing library technology	.356 .000 125	.369 .000 125
Providing reading incentive activities	.318 .000 125	.301 .000 125
Library Use:		
Number of visits by individuals to library per student	.347 .000 125	.362 .000 125

Number of books and other materials checked out per 100 students	.435 .000 125	.451 .000 125
Library Collection:		
Print volumes per student	.630 .000 128	.639 .000 128
Subscriptions to newspapers and magazines per 100 students	.627 .000 128	.595 .000 128
Volumes purchased in 99-00 per 100 students	.379 .000 105	.351 .000 105
Medicine and health volumes purchased in 99-00 per 100 students	.454 .000 110	.518 .000 110
Library Financial Resources:		
Library capital outlay per student	.436 .000 122	.343 .000 122
Library operational expenditures per student	.336 .000 122	.281 .001 122

Volunteers are less common in high school libraries than in elementary and middle/junior high schools. Only 12 to 13 percent of the high school libraries reported using volunteers. Volunteers in high school libraries are typically students. On average, about six students work in the library in a typical week for about 18 hours.

Table III.16 – High School Library Volunteers

Library Volunteers	Means/Percent

Number of adult volunteers	0.5
Number of student volunteers	5.7
Number of library volunteers	6.3
Number of hours adult volunteers work per week	1.5
Number of hours student volunteers work per week	17.7
Total number of volunteer hours per week	20.7
Percent of libraries with adult volunteers	13.2%
Percent of libraries with student volunteers	12.4%

Although volunteers are less common in high school libraries than in elementary and middle/junior high school libraries, high school libraries with larger collections and more recent collections are more likely to use volunteers.

1.2 Staff Qualifications

Librarians were asked to report the qualifications of their staff; both professional librarians and library aides. As shown in the table below:

- about 60 percent of elementary and middle/junior high school libraries and 74 percent of high school libraries have staff with a Master's degree or higher and with teacher and library science certification
- 22 percent of elementary school libraries, 34 percent of middle/junior high school libraries, and 25 percent of high school libraries have staff with a Bachelor's degree and teacher and library science certification.

Table III.17 – Library Staff Qualifications

Qualifications	Elementary Schools	Middle/Junior High Schools	High Schools
	(267) %	(104) %	(129) %

Master's degree or higher with teacher and library science certification	59.2%	60.6%	73.6%
Master's degree with teacher certification or other state credentials	3.7%	1.9%	5.4%
Master's degree without teacher certification or other state credentials	0.4%	--	0.8%
Bachelor's degree with teacher and library science certification	21.7%	33.6%	24.8%
Bachelor's degree with teacher certification and ExCet	15.0%	6.7%	8.5%
Bachelor's degree without teacher certification	6.7%	6.7%	4.6%
Less than Bachelor's degree	53.2%	99.0%	69.0%

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App. A

2. Library Financial Resources

The School Library Programs: Standards and Guidelines for Texas recognize that a viable library needs an adequate budget to acquire library materials, equipment and supplies. The standards and guidelines recommend that libraries "receive sufficient funds, but not less than one (1%) percent (acceptable library program), two (2%) percent (recognized library program) or three (3%) percent (exemplary library program) of the total instructional budget annually to acquire library materials, equipment and supplies in support of school library program." On average, library budgets, at all educational levels, constitute less than one percent of the respective school's instructional budget. At the elementary and middle/junior high school levels, the average library's budget is one-half of one percent of the school's instructional budget. At the high school level, the average library budget is closer to one percent of the school's instructional budget. Among all libraries in our sample, only two elementary school libraries and three high school libraries had a budget that was three percent or more of the school's instructional budget.

Table III.18 – Library Budget as Percent of Instructional Budget

Library	Library Budget as Percent of Instructional Budget Mean
Elementary school libraries	0.53%
Middle/Junior high school libraries	0.49%
High school libraries	0.79%

On average, libraries' operating expenditures (funded by the school) per student ranged from \$16.45 to \$26.69. When taking all funding sources into account, libraries operating expenditures per student ranged from \$22.14 at the elementary school level to \$31.45 at the high school level.

Table III.19 – Library Operating Budget Per Student

Library	Library Operating Budget per Student (School Funds Only)	Library Operating Budget per Student (All Funding Sources)
Elementary school libraries	$16.45	$22.14
Middle/Junior high school libraries	$16.64	$24.26
High school libraries	$26.69	$31.45

2.1 Elementary School Library Budget

Forty-nine percent of elementary school librarians reported that they prepare and submit a library budget request to their principal. On average, elementary school library's operational expenditures in 1999-00 were $12,529 and its capital outlay budget was $3,213. Seventy-five percent of operational expenditures came from the school as did 47 percent of its capital outlay budget. Twenty-five percent of operational expenditures and 53 percent of capital outlay came from other sources. Elementary school libraries spent, on average, 76 percent of their operating budget on print materials and 13 percent on electronic materials and access to information.

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Table III.20 – Elementary School Libraries 1999-00 Budget

1999-00 Budget	School Budget		All Other Sources		Total	
	$ Means	%	$ Means	%	$ Means	%
Total Operating Expenditures	$9,371.06	100.0%	$3,159.16	100.0%	$12,529.47	100.0%
Books as reported in budget category 12-6669	$6,383.92	68.1%	$2,573.47	81.5%	$8,957.39	71.5%

Newspapers and magazines as reported in budget category 12-6399	$612.53	6.5%	$14.95	0.5%	$627.42	5.0%
Electronic format materials (software, CD ROM, laser discs)	$483.52	5.2%	$142.32	4.5%	$625.84	5.0%
Non-print materials (audio, video, microform)	$618.92	6.6%	$179.84	5.7%	$798.06	6.4%
Electronic access to information (online databases, searching, Internet access)	$128.22	1.4%	$49.50	1.6%	$177.72	1.4%
Other operating expenditures	$1,143.95	12.2%	$199.08	6.3%	$1,343.04	10.7%
Total Capital Outlay	$1,517.10	100.0%	$1,696.24	100.0%	$3,213.33	100.0%
Equipment (computers, CD ROM drives, VCRs)	$1,083.52	71.4%	$1,020.52	60.2%	$2,104.04	65.5%

Other capital purchases (furniture, shelving)	$433.58	28.6%	$675.72	39.8%	$1,109.29	34.5%
Total Budget	$10,888.16		$4,855.40		$15,742.80	

Elementary school library operational expenditures were most highly associated with the up-to-date status of its collection. Libraries with more up-to-date collections as reflected by the number of volumes per 100 students are likely to have a higher operating budget per student. The amount of library's operational budget is also associated with its staffing levels. Libraries with high operating budgets tended to have more librarians and more library staff per 100 students.

Table III.21 – Elementary School Library Operational Expenditures Per Student

Library Operational Expenditures Per Student	Pearson Correlation (r) Number (n) Probability
Number of volumes purchased in 99-00 per 100 students	.669 .000 215
Current subscriptions of newspapers and magazines per 100 students	.331 .000 250
Librarians per 100 students	.483 .000 258
Library staff per 100 students	.477 .000 258

2.2 Middle/Junior High School Library Budget

Fifty-nine percent of middle/junior school librarians reported that they prepare and submit a library budget request to their school administration. The average operational expenditures of middle/junior high school libraries in 1999-00 were $16,145 and its capital outlay budget was

$5,450. Sixty-nine percent of the library's operational expenditures came from the school as did 28 percent of its capital outlay budget. Thirty-one percent of operational expenditures and 72 percent of capital outlay came from other sources. Middle/Junior high school libraries spent, on average, 72 percent of their operating budget on print materials and 18 percent on electronic materials and electronic access to information.

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Table III.22 – Middle/Junior High School Libraries 1999-00 Budget

1999-00 Budget	School Budget		All Other Sources		Total	
	$ Means	%	$ Means	%	$ Means	%
Total Operating Expenditures	$11,095.13	100.0%	$5,050.54	100.0%	$16,144.67	100.0%
Books as reported in budget category 12-6669	$6,871.27	61.9%	$3,472.17	68.7%	$10,343.44	64.1%
Newspapers and magazines as reported in budget category 12-6399	$1,236.35	11.1%	$16.35	0.3%	$1,251.70	7.8%
Electronic format materials (software, CD ROM, laser discs)	$510.77	4.6%	$233.66	4.6%	$744.43	4.6%
Non-print materials (audio, video, microform)	$676.24	6.1%	$180.35	3.6%	$856.58	5.3%

Electronic access to information (online databases, searching, Internet access)	$279.60	2.5%	$1,096.53	21.7%	$1,376.14	8.5%
Other operating expenditures	$1,520.90	13.7%	$51.48	1.0%	$1,572.38	9.7%
Total Capital Outlay	$1,530.98	100.0%	$3,918.78	100.0%	$5,449.76	100.0%
Equipment (computers, CD ROM drives, VCRs)	$1,176.70	76.9%	$3,209.02	81.9%	$4,385.72	80.5%
Other capital purchases (furniture, shelving)	$354.28	23.1%	$709.76	18.1%	$1,064.04	19.5%
Total Budget	$12,626.11		$8,969.32		$21,594.43	

Middle/Junior high school libraries with a higher operational budget are more likely to have more librarians and library aides and more staff hours per 100 students. Such libraries are also more likely to have larger print collections.

Table III.23 – Middle/Junior High School Library Operational Expenditures Per Student

Correlation of Library Operational Expenditures Per Student with:	Pearson Correlation (r) Probability (p) Number (n)
Print volumes per student	.404 .000 100

Librarians per 100 students	.425 .000 100
Librarian hours per 100 students	.415 .000 100
Library staff hours per 100 students	.426 .000 100
Library staff per 100 students	.394 .000 100

2.3 High School Library Budget

Sixty-nine percent of high school libraries reported that they prepare and submit a library budget request to their school administration. On average, a high school library's operational expenditures in 1999-00 were $27,175 and its capital outlay budget was $10,134. Eighty-three percent of the library's operational expenditures and 55 percent of its capital outlay budget came from the school. Seventeen percent of the operational expenditures and 45 percent of capital outlay came from other sources. High school libraries spent, on average, 71 percent of their operating budget on print materials and 18 percent on electronic media and electronic access to information.

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Table III.24 – High School Libraries 1999-00 Budget

1999-00 Budget	School Budget		All Other Sources		Total	
	$ Means	%	$ Means	%	$ Means	%
Total Operating Expenditures	$22,625.68	100.0%	$4,557.78	100.0%	$27,174.66	100.0%

Books as reported in budget category 12-6669	$13,375.73	59.1%	$3,618.72	79.4%	$16,994.45	62.5%
Newspapers and magazines as reported in budget category 12-6399	$2,290.12	10.1%	$36.78	0.8%	$2,326.60	8.6%
Electronic format materials (software, CD ROM, laser discs)	$1,299.16	5.7%	$95.92	2.1%	$1,395.08	5.1%
Non-print materials (audio, video, microform)	$1,546.03	6.8%	$345.27	7.6%	$1,882.81	6.9%
Electronic access to information (online databases, searching, Internet access)	$1,362.12	6.0%	$276.48	6.1%	$1,638.59	6.0%
Other operating expenditures	$2,752.52	12.2%	$184.61	4.1%	$2,937.13	10.8%
Total Capital Outlay	$5,371.54	100.0%	$4,802.06	100.0%	$10,134.24	100.0%

Equipment (computers, CD ROM drives, VCRs)	$3,595.36	66.9%	$3,699.13	77.0%	$7,264.17	71.7%
Other capital purchases (furniture, shelving)	$1,776.18	33.1%	$1,102.93	23.0%	$2,870.07	28.3%
Total Budget	$27,997.22		$9,359.84		$37,308.90	

High school libraries with higher operating budgets per student are more likely to have more up-to-date collections and library technology resources. They are also more likely to have more librarian hours per 100 students.

Table III.25 – High School Library Operational Expenditures Per Student

Correlation of Library Operational Expenditures Per Student with:	Pearson Correlation (r) Probability (p) Number (n)
Library Collection:	
Books and library materials purchased in 99-00 per 100 students	.861 .000 104
Books in medicine and health purchased in 99-00 per 100 students	.471 .000 109
Current subscriptions to newspapers and magazines per 100 students	.440 .000 122
Library Technology:	
Number of computers in or under library supervision and those with access to library resources per 100 students	.674 .000 121

Number of computers in or under library supervision with modems per 100 students	.467 .000 121
Staffing:	
Librarian hours per 100 students	.403 .000 122
Library staff per 100 students	.374 .000 122

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3. Curriculum Integration

The School Library Programs: Standards and Guidelines for Texas emphasize the curriculum integration role of librarians. Librarians are expected to collaborate with teachers through formal planning sessions to develop, implement, and evaluate learning experiences in a flexibly scheduled environment and to teach problem-solving process models and literature application. Librarians are also expected to direct and encourage students, both individually and in groups, in problem-driven research, in the application of information to solve problems, and in the use of technology to locate, gather, and synthesize relevant information.

The survey listed 16 activities librarians are expected to perform and gathered data on the number of hours in a typical week that library staff spend on each of these tasks. The activities were divided into three categories:

- Program administration
- Information access and delivery
- Learning and teaching

As seen in the table below, the ten top activities, exclusive of the performance of basic library activities, that library staff spend most hours on, are similar across educational levels.

Table III.26 – Curriculum Integration Activities

Elementary School Libraries	Middle/Junior High School Libraries	High School Libraries
Reading incentive activities	Managing library technology	Managing library technology
Managing library technology	Teaching cooperatively with teachers	Literacy information skills instruction
Literacy information skills instruction	Literacy information skills instruction	Teaching cooperatively with teachers
Administering electronic reading programs	Administering electronic reading programs	Identifying materials for instructional units developed by teachers
Teaching cooperatively with teachers	Identifying materials for instructional units developed by teachers	Administering electronic reading programs

Identifying materials for instructional units developed by teachers	Reading incentive activities	Planning instructional units with teachers
Planning instructional units with teachers	Planning instructional units with teachers	Reading incentive activities
Planning in curriculum, technology, planning committees	Participating in curriculum, technology, planning committees	Participating in curriculum, technology, planning committees
Attending family meetings	Providing staff development to teachers	Meeting with library staff in district
Assisting teachers to access or utilize state initiative information	Assisting teachers to access or utilize state initiative information	Assisting teachers to access or utilize state initiative information

However, not all libraries engage in these activities. For example,

- About 60 percent of the libraries provide staff development to teachers.
- In two-thirds to three-quarters of the libraries librarians teach cooperatively with teachers.
- In about 80 percent of the libraries, librarians plan instructional units with teachers.
- In 75 to 83 percent of the libraries, librarians participate in curriculum, technology, or planning committees.

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Table III.27 – School Library Staff Activities

Mean Hours per Week	Elementary Schools (267)		Middle/Junior High Schools (104)		High Schools (129)	
	Mean Hours	%	Mean Hours	%	Mean Hours	%
Learning and Teaching:						
Planning instructional units with teachers	1.45	78.6%	1.86	81.7%	1.87	81.4%
Teaching cooperatively with teachers	2.94	67.4%	4.73	74.0%	5.96	75.2%
Providing staff development to teachers or other school staff	0.63	60.3%	0.92	61.5%	0.94	59.7%

Meetings with building or district curriculum, technology, planning, school improvement committees, teams, etc.	1.12	83.1%	1.37	77.9%	1.13	75.2%
Assisting individuals or groups of teachers to access or utilize state initiative information	0.94	47.6%	0.87	41.3%	0.99	36.4%
Information Access and Delivery:						
Performing basic library activities (checking in and out, reshelving, processing, retrieving)	24.71	97.0%	25.48	97.1%	37.68	96.1%
Identifying materials for instructional units developed by teachers	2.79	92.1%	3.26	88.5%	4.83	93.0%
Providing information skills instruction	4.21	83.5%	4.25	81.7%	7.23	87.6%
Providing reading incentive activities	7.17	97.4%	2.91	76.0%	1.82	64.3%
Program Administration:						
Managing library technology	5.16	88.4%	6.76	88.5%	13.46	93.0%
Administering electronic reading programs (Accelerated Reader, Electronic Bookshelf, etc.)	3.48	62.9%	3.91	62.5%	2.08	30.2%
Managing inter-library loans	0.55	50.6%	0.41	44.2%	0.76	51.2%
Meeting with building and district library staff	0.82	75.6%	0.82	72.1%	1.20	72.1%
Meeting with library staff outside the district	0.32	26.6%	0.31	28.8%	0.44	42.6%
Meeting with principal or other building or district administrators	0.77	80.9%	0.68	70.2%	0.89	81.4%
Attending faculty or staff meetings	1.00	91.4%	0.84	88.5%	0.91	89.1%

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Although the School Library Programs: Standards and Guidelines did not recommend specific amounts of time that librarians should spend on specific activities, library staff spend a very small amount of time on curriculum integration activities which according to the standards and guidelines facilitate "significant learning" by integrating content and process. On average, library staff who engage in these activities spend between 12 to 16 percent of their time on the following teaching and learning activities.

- Library staff spend between five and eight percent of their time on teaching cooperatively with teachers.
- Library staff spend between two and three percent of their time planning instructional units with teachers.
- Library staff spend less than two percent of their time assisting individuals or groups of teachers to access and utilize state initiative information.
- They spend about one percent of their time per week providing staff development to teachers and other school staff.

Library staff spend a larger percent of their time on student-related activities; activities whose objective was defined by the standards and guidelines to "engage, direct and encourage students, individually and in groups" to apply information to solve problems.

- Library staff spend between seven and eight percent of their time providing information skills instruction.
- Library staff spend between two (high school) and 12 (elementary school) percent of their time providing reading incentive activities.

Table III.28 – School Library Staff Activities

Mean Hours per Week	Elementary Schools (267)		Middle/Junior High Schools (104)		High Schools (129)	
	Mean Hours	%	Mean Hours	%	Mean Hours	%
Learning and Teaching:	7.08	12.1%	9.75	16.4%	10.89	13.2%
Planning instructional units with teachers	1.45	2.5%	1.86	3.1%	1.87	2.3%
Teaching cooperatively with teachers	2.94	5.1%	4.73	8.0%	5.96	7.2%

Providing staff development to teachers or other school staff	0.63	1.1%	0.92	1.5%	0.94	1.1%
Meetings with building or district curriculum, technology, planning, school improvement committees, teams, etc.	1.12	1.9%	1.37	2.3%	1.13	1.4%
Assisting individuals or groups of teachers to access or utilize state initiative information	0.94	1.6%	0.87	1.5%	0.99	1.2%
Information Access and Delivery:	38.88	67.0%	35.90	60.4%	51.56	62.7%
Performing basic library activities (checking in and out, reshelving, processing, retrieving)	24.71	42.6%	25.48	42.9%	37.68	45.8%
Indentifying materials for instructional units developed by teachers	2.79	4.8%	3.26	5.5%	4.83	5.9%
Providing information skills instruction	4.21	7.2%	4.25	7.2%	7.23	8.8%
Providing reading incentive activities	7.17	12.3%	2.91	4.9%	1.82	2.2%
Program Administration	12.1	20.8%	13.73	23.1%	19.74	24.0%
Managing library technology	5.16	8.9%	6.76	11.4%	13.46	16.4%

Administering electronic reading programs (Accelerated Reader, Electronic Bookshelf, etc.)	3.48	6.0%	3.91	6.6%	2.08	2.5%
Managing inter-library loans	0.55	0.9%	0.41	0.7%	0.76	0.9%
Meeting with building and district library staff	0.82	1.4%	0.82	1.4%	1.20	1.5%
Meeting with library staff outside the district	0.32	0.5%	0.31	0.5%	0.44	0.5%
Meeting with principal or other building or district administrators	0.77	1.3%	0.68	1.1%	0.89	1.1%
Attending faculty or staff meetings	1.00	1.7%	0.84	1.4%	0.91	1.1%
Total Mean Hours Per Week	58.06	100.0%	59.38	100.0%	82.19	100.0%

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4. Library Collection

The School Library Programs: Standards and Guidelines expect (model) libraries to:

- Offer a balance of print, multimedia, and electronic resources. The library collection should be current and selected according to district and board approved selection policies.
- Develop and maintain a balanced collection based on curriculum and user needs.
- Offer access to resources via world-wide networks
- Have provisions for access to information beyond the campus via inter-library loans, telecommunications and technology.

The standards and guidelines also specify a range for the size of the collection for different categories of materials.

- Collection of books, software, and electronic resources: 9,000 to 12,000
- Subscriptions for elementary schools: 20 to 45
- Subscriptions for middle/junior high schools: 40 to 125
- Subscriptions for high schools: 45 to 150
- Access to a periodical database
- Access to a full-text news database
- Access to at least one local and one state or national news source

Over 77 percent of elementary school libraries, 93 percent of middle/junior high school libraries, and 74 percent of high school libraries have a collection development policy. In most cases the collection development policies address materials selection, reconsideration of challenged materials and materials weeding. Between 50 and 55 percent of the libraries participate in a district program to evaluate print and non-print resources. The program is likely to be staffed by librarians and teachers who meet periodically to evaluate new materials.

Table III.29 – Library Collection Development Policies

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Library with Collection Development Policies	Elementary Schools	Middle/Junior High Schools	High Schools
	(267) %	(104) %	(129) %
Percent of libraries with a collection development policy	77.5%	93.3%	74.4%
Percent of libraries with materials selection policy	74.9%	70.2%	72.9%
Percent of libraries with weeding policy	69.7%	61.5%	65.1%
Percent of libraries with reconsideration of challenged materials policy	75.6%	70.2%	71.3%
Percent of libraries participating in a system for evaluation of print and non-print resources	52.8%	50.0%	55.0%

In addition to a collection of print materials, most libraries have current subscriptions to magazines (over 90 percent), video materials (90 percent), and encyclopedias and reference titles on CD ROM (80 percent). Most middle/junior high (91 percent) and high school (97 percent) libraries also subscribe to newspapers compared with 61 percent of elementary school libraries. About 60 percent of the libraries have software packages for in-library use. Between 43 percent (middle/junior high school) and 53 percent (high school) of the libraries have electronic, Internet-based, subscriptions.

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Table III.30 – School Library Collections

Percent of Libraries Having Following Materials in Collection	Elementary Schools	Middle/Junior High Schools	High Schools
	(267) %	(104) %	(129) %

Current print subscriptions to magazines	95.1%	92.3%	96.9%
Current print subscriptions to newspapers	60.7%	91.4%	96.9%
Electronic subscriptions received via the Internet	45.6%	43.3%	52.9%
Encyclopedias and reference titles on CD ROM or laser disc	86.2%	79.8%	79.1%
Video materials (cassettes and disks)	91.4%	88.5%	89.2%
Computer software packages for use in school library by students	63.7%	55.8%	62.8%

The size of library collections by category of material, mean and maximum is displayed in the following table.

Table III.31 – School Library Holdings

Holdings	Elementary Schools		Middle/Junior High Schools		High Schools	
	Mean	Max.	Mean	Max.	Mean	Max.
Print volumes	10,494.46	116,034	10,920.01	27,065	14,340.72	50,000
Current print subscriptions to magazines	23.03	115	51.23	2,125	49.07	250
Current print subscriptions to newspapers	0.90	5	2.32	50	3.07	10

Electronic subscriptions received via the Internet	15.95	2,000	16.95	1,450	74.16	3,500
Encyclopedias and reference titles on CD ROM or laser disc	13.29	250	6.65	90	9.80	100
Video materials (cassettes and disks)	424.87	2,378	420.20	2,500	617.27	4,000
Computer software packages for use in school library by students	32.47	537	8.67	150	13.95	500

The use of online databases is still low. About 19 to 39 percent of elementary school libraries, 23 to 35 percent of middle/junior high school libraries, and 33 to 49 percent of high school libraries subscribe to online services.

Table III.32 – School Library Electronic Subscriptions

Subscriptions to Online Licensed Services (Exclusive of TLC Services)	Elementary Schools	Middle/Junior High Schools	High Schools
	(267) %	(104) %	(129) %
Online periodical services (BigChalk, H.W. Wilson)	61 22.8%	29 27.9%	63 48.8%
CD ROM services (SIRS, Newsbank)	51 19.1%	24 23.1%	43 33.3%

Other full text services (encyclopedias)	103 38.6%	36 34.6%	53 41.1%

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5. Technology Resources

Libraries have a wide range of multimedia and technology-related equipment and systems.

Table III.33 – School Library Electronic Equipment

Percent of Libraries with:	Elementary Schools (267)	Middle/Junior High Schools (104)	High Schools (129)
An automated circulation system	95.5%	94.2%	91.5%
An automated district wide catalog	46.4%	35.6%	42.6%
An automated catalog accessible through the Internet	43.4%	33.6%	45.0%
A telephone	94.4%	95.2%	96.9%
A fax machine	13.5%	25.0%	31.8%
A CD ROM server	40.4%	46.1%	50.4%
A video projector	62.9%	71.1%	64.3%
A digital camera	55.4%	51.0%	51.9%
A satellite dish	15.0%	30.8%	48.8%
One or more lap tops	21.3%	31.7%	27.1%

Electronic library resources can be accessed through computers in or under library supervision. They can also be accessed by school computers from classrooms and offices and other school facilities, thereby broadening the library's presence throughout the school outside the library's physical location.

Most libraries (97 to 99 percent) have computers. Most of the libraries' computers are current. Between 92 and 95 percent of the libraries indicated that their computers are connected to the Internet. About 90 percent of the libraries also reported that their computers can access the library's catalog and about 81 to 85 percent of the libraries have computers that can access the library's databases. About 70 percent of the libraries have computers with modems. Most of the libraries (94 to 95 percent) also have computers with CD ROM drives.

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Table III.34 – Percent of Libraries with Computers

Computers Located in or Under Library Supervision	Elementary Schools (267)	Middle/Junior High Schools (104)	High Schools (129)
	%	%	%
Computers	97.4%	98.1%	99.2%
Computer with Internet connection	91.8%	94.2%	94.6%
Computers on a LAN	67.4%	68.3%	73.6%
Computers on a WAN	67.1%	67.3%	65.1%
Computers with access to school library catalog	86.5%	88.5%	86.8%
Computers with access to library databases	81.3%	82.7%	84.5%
Computers with CD ROM drives	94.0%	95.2%	95.3%
Computers with networked access to CD ROM resources	49.8%	51.0%	56.4%

Computers that can display text only	16.1%	16.4%	19.4%
Computers that can display graphics	89.5%	82.3%	93.0%
Computers connected to a modem or equivalent	67.8%	70.2%	72.9%
Computers connected directly or networked to a printer	94.4%	94.1%	97.7%
Computers with any accommodations for persons with disabilities	9.7%	13.5%	21.7%

On average, elementary school libraries have 10 computers in the library or under library supervision. Middle/Junior high libraries have 16 computers. High school libraries have 20 computers. In elementary school libraries, 8.5 out of the 10 computers are connected to the Internet. In middle/junior high school libraries 14 out of the 16 computers have Internet connections as do 16 out of the 20 computers a high school library has, on average.

Table III.35 – Library Computers

Computer Located in or Under Library Supervision	Elementary Schools (267)		Middle/Junior High Schools (104)		High Schools (129)	
	Mean	Range	Mean	Range	Mean	Range
Total number of computers	10.29	1-100	15.97	1-124	19.60	2-87
Computers with Internet connection	8.48	0-100	13.94	0-105	16.34	0-87
Computers on a LAN	6.28	0-75	10.85	0-105	12.79	0-87
Computers on a WAN	6.17	0-78	9.62	0-105	12.20	0-87

Computers with access to school library catalog	7.10	0-100	10.42	0-100	14.30	0-87
Computers with access to library databases	5.47	0-49	9.80	0-100	13.81	0-87
Computers with CD ROM drives	8.99	0-100	13.20	0-102	16.00	0-87
Computers with networked access to CD ROM resources	4.86	0-100	7.12	0-100	10.35	0-87
Computers that can display text only	1.41	0-100	0.72	0-11	1.70	0-54
Computers that can display graphics	8.75	0-100	13.69	0-102	16.99	0-87
Computers connected to a modem or equivalent	5.73	0-78	8.95	0-65	12.53	0-87
Computers connected directly or networked to a printer	8.41	0-78	14.18	0-100	18.35	0-87
Computers with any accommodations for persons with disabilities	0.66	0-49	2.06	0-121	1.01	0-221

Between 65 and 70 percent of the libraries reported that their schools have computers that can access networked library resources. Between 44 and 50 percent of the libraries reported having school computers that can access the library catalog; 42 to 52 percent indicated that their school computers can access the library's databases. About one-third reported that their school computers can access the library's networked CD ROM resources.

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Table III.36 – Percent of Libraries with School Computers Accessing Networked Library Resources

Percent of Libraries with School Computers From Which Networked Library Resources May Be Accessed	Elementary Schools (267)	Middle/Junior High Schools (104)	High Schools (129)
	%	%	%
Computers	70.0%	65.4%	68.2%
Computers with Internet connection	60.7%	58.7%	56.6%
Computers on a LAN	48.3%	46.2%	51.2%
Computers on a WAN	44.6%	51.9%	39.5%
Computers with access to school library catalog	45.3%	44.2%	50.4%
Computers with access to library databases	42.0%	46.2%	51.9%
Computers with CD ROM drives	58.8%	56.7%	55.0%
Computers with networked access to CD ROM resources	33.3%	32.7%	33.3%
Computers that can display text only	5.2%	4.8%	3.9%
Computers that can display graphics	56.9%	56.7%	58.9%
Computers connected to a modem or equivalent	43.8%	39.4%	42.6%
Computers connected directly or networked to a printer	59.2%	59.6%	60.5%

Computers with any accommodations for persons with disabilities	24.7%	20.2%	17.1%

On average, elementary schools have 62 computers that can access library resources. Middle/junior high school library resources can be accessed by 97 school computers. High school library resources can be accessed by 159 school computers.

Table III.37 – School Computers Accessing Networked Library Resources

Mean Number of Computers in School from which Library Resources may be Accessed	Elementary Schools (267)		Middle/Junior High School (104)		High Schools (129)	
	Mean	Range	Mean	Range	Mean	Range
Total number of computers	62.11	1-320	97.16	0-850	159.03	2-1880
Computers with Internet connection	51.48	0-304	76.19	0-350	131.66	0-1880
Computers on a LAN	44.95	0-319	58.26	0-105	96.29	0-825
Computers on a WAN	43.14	0-320	84.80	0-850	113.94	0-1880
Computers with access to school library catalog	37.86	0-304	65.47	0-850	108.45	0-1880
Computers with access to library databases	33.11	0-304	70.86	0-850	130.76	0-1880
Computers with CD ROM drives	48.79	0-314	72.21	0-350	122.56	0-1880
Computers with networked access to CD ROM resources	30.26	0-294	51.16	0-688	83.34	0-1880
Computers that can display text only	3.32	0-294	4.72	0-231	4.18	0-450
Computers that can display graphics	51.31	0-304	85.51	0-688	130.60	0-1880

Computers connected to a modem or equivalent	36.92	0-304	60.36	0-688	102.02	0-1880
Computers connected directly or networked to a printer	49.34	0-315	85.34	0-850	136.73	0-1880
Computers with any accommodations for persons with disabilities	4.58	0-190	1.75	0-75	4.16	0-221

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6. Library Facilities and Usage

The School Library Programs: Standards and Guidelines expect libraries to provide access during and beyond the instructional day. Seventy-one percent of the elementary school libraries reported that they provide access before and after the school day. On average, elementary school libraries are open for two hours a week before the school day and 2.7 hours at the end of the school day. Between 81 and 85 percent of the middle/junior high school libraries indicated that they are open before and after the school day. On average these libraries are open for 2.7 hours per week before and after the school day. Eighty-three percent of the high school libraries also have extended service hours. On average, they are open for 2.8 hours a week before the school day and 3.9 hours at the end of the school day.

Table III.38 – Library Service Hours Per Week

Service Hours Per Week	Elementary Schools (267)		Middle/Junior High Schools (104)		High Schools (129)	
	Mean Hours	% of Libraries	Mean Hours	% of Libraries	Mean Hours	% of Libraries
Mean hours library is open per week during school hours	36.3	99.2%	37.0	100.0%	37.6	98.4%

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Mean hours library is open per week before school hours	2.0	70.0%	2.7	84.6%	2.8	82.9%
Mean hours library is open per week after school hours	2.7	70.8%	2.7	80.8%	3.9	82.9%

The elementary school libraries' operating hours per week are most strongly associated with the library's operating budget per student and subscriptions. Elementary school libraries with higher operating expenditures per student are more likely to be open more hours per week. Libraries with larger collections of newspapers and magazines are also more likely to be open more hours per week.

Table III.39 – Elementary School Library Service Hours Correlations

Correlation of Library Service Hours Per 100 Students with:	Pearson Correlation (r) Probability (p) Number (n)
Current subscriptions to magazines and newspapers	.461 .000 256
Library's operating expenditures per student	.499 .000 256

At the middle/junior high school level, libraries that operate more hours per week per 100 students are associated with greater library use as reflected by the number of library visits per student and the volume of materials checked out per 100 students. These libraries are also characterized by larger print collection per student and video collection per 100 students. Libraries that operated more hours per week also tend to have larger operating budgets per student.

Table III.40 – Middle/Junior High School Library Service Hours Correlations

Correlation of Service Hours Per 100 Students with:	Pearson Correlation (r) Probability (p) Number (n)
Number of volumes per student	.569 .000 103
Video materials per 100 students	.405 .000 103
Materials checked out per 100 students	.541 .000 102
Scheduled and unscheduled visits to library by individuals per student	.599 .000 102
Library's operating expenditures per student	.460 .000 101

High school libraries with longer service hours per 100 students are likely to have larger collections of print volumes per student and newspapers and magazines per 100 students. Libraries that operated more hours a week per 100 students are also associated with greater library use as measured by the number of materials checked out per 100 students and number of library visits per student.

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Table III.41 – High School Library Service Hours Correlations

Correlation of Service Hours Per 100 Students with:	Pearson Correlation (r) Probability (p) Number (n)

Number of current subscriptions to newspaper and magazines per 100 students	.768 .000 126
Number of print volumes per student	.765 .000 126
Volumes purchased in 1999-00 per 100 students	.403 .000 104
Materials checked out per 100 students	.620 .000 125
Scheduled and unscheduled visits to library by individuals per student	.499 .000 125
Library's operating expenditures per student	.365 .000 121

Data reported by libraries point to a heavy use of the library by individuals and classes. Librarians reported over 100 contacts per week with individuals and classes for the purpose of information skills instruction. The average number of visits by classes ranged from 34 to 38. Visits by individuals ranged from 347 to 437, on average.

Inter-library loans constitute one means by which the School Library Programs: Standards and Guidelines encourage libraries to access information resources beyond the campus. Between 50 and 60 percent of the libraries loan materials to other libraries in the district. Only about five percent of the libraries reported loaning to and borrowing materials from libraries outside the district.

Table III.42 – Library Use Per Week

Use per Week	Elementary Schools		Middle/Junior High Schools		High Schools	
	Mean #	% of Libraries	Mean #	% of Libraries	Mean #	% of Libraries

Number of scheduled and unscheduled visits to library by individuals	437.03	94.4%	346.63	96.1%	358.75	94.6%
Number of scheduled and unscheduled visits to library by classes or other groups	33.94	97.4%	35.90	96.1%	37.68	95.3%
Number of scheduled and unscheduled information skills instruction contacts with individuals	87.50	92.1%	74.97	94.2%	114.97	92.2%
Number of scheduled and unscheduled information skills instruction contacts with classes or other groups	18.55	87.6%	17.47	86.5%	27.45	90.7%
Total number of books and other materials checked out during the most recent full week	982.39	92.5%	596.24	93.3%	247.06	83.7%

Number of materials used in the library	798.49	80.9%	342.78	79.8%	698.45	83.7%
Number of loans provided by library to other librarians in district	5.95	60.3%	3.21	51.9%	2.66	49.6%
Number of loans provided by library to other libraries in district and ESC	4.67	50.6%	2.93	42.3%	2.03	44.2%
Number of loans provided by library to other libraries outside the district	0.08	2.6%	0.17	6.7%	0.30	4.6%
Number of loans received by library from other libraries outside the district	0.24	4.1%	0.07	3.8%	0.07	6.2%

At all educational levels, library use is significantly correlated with library staff hours. Libraries with more staff hours per 100 students exhibit greater use as reflected by the number of visits to the library and the volume of materials checked out.

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Table III.43 – Elementary School Library Aides Hours and Visits to Library

Correlation of Library Aides Hours Per Week with:	Pearson Correlation (r) Probability (p) Number (n)
Scheduled and unscheduled visits to library by individuals	.223 .000 264

Table III.44 – Middle/Junior High School Library Staff Hours and Visits to Library

Correlation of Library Staff Hours Per Week with:	Pearson Correlation (r) Probability (p) Number (n)
Librarian hours per 100 students with:	
Scheduled and unscheduled visits to library by individuals	.631 .000 101
Number of materials checked out per 100 students	.598 .000 101
Library staff hours per 100 students with:	
Scheduled and unscheduled visits to library by individuals	.619 .000 101
Scheduled and unscheduled information skills instruction contacts with individuals	.404 .000 101

Table III.45 – High School Library Staff Hours and Visits to Library

Correlation of High School Library Staff Hours Per Week with:	Pearson Correlation (r) Probability (p) Number (n)

Scheduled and unscheduled visits to library by individuals	.469 .000 125
Number of materials checked out per 100 students	.613 .000 125

The School Library Program Standards and Guidelines for Texas encourage a flexibly-scheduled environment. According to elementary school librarians, on average, about 33 percent of class visits to the library are flexibly scheduled. At the middle/junior high school level and high school, the percent of flexibly scheduled visits to the library are 72 and 82 percent, respectively.

Table III.46 – Flexibly and Regularly Scheduled Class Visits to Library

Mean Percent of Flexibly and Regularly Scheduled Class Library Visits	Elementary Schools (267)	Middle/Junior High Schools (104)	High Schools (129)
Flexibly scheduled class visits	33.55	72.15	82.14
Regularly scheduled class visits	66.45	27.85	17.86

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IV. THE RELATIONSHIP BETWEEN LIBRARY RESOURCES AND ACTIVITIES AND STUDENT PERFORMANCE

The data compiled in this study consisted of more than 200 library, school, and community variables. To examine the relationship between library resources and activities and students' performance as measured by the percent of students who met minimum expectations on TAAS reading, the first step in the analysis was to identify the variables that best represented the library's programs, resources and activities. These variables (predictors) were identified by computing bivariate correlation coefficients. Based on the School Library Programs: Standards and Guidelines for Texas and recent studies, library variables were grouped into five areas:

- Library program development
- Leadership activities
- Teaching/Collaboration activities
- Library technology
- School technology with access to networked library resources

Similar analytical procedures were also used with the large number of school and community variables.

The next step was to move from a group of single library variables to the creation of groupings (factors) in order to examine the relationship among these variables. This was achieved by using factor analysis.

The third step in the analysis was to examine the relationship between student performance on TAAS reading (i.e. the percent of students who met minimum expectations of TAAS reading) and the library variables and identify which group of variables was most strongly associated with TAAS performance.

The fourth step was to expand the factor analysis by adding school and community variables. The objective of this step was to identify factors that are uncorrelated with each other for use in a multiple regression analysis. Using uncorrelated factors in a regression analysis is important in order to avoid multicollinearity.

The last step in the examination of the effect of library variables on TAAS performance was to measure the degree to which TAAS performance can be explained by library variables and identify those variables that contribute most to TAAS performance.

Library Program Development

1.1 Elementary School Libraries

The survey collected data from librarians on a wide range of library program infrastructure elements. Among these elements, six variables were identified as having positive and significant correlations for elementary school libraries. The bivariate correlations between these variables were typically moderate to high. These variables, all expressed as ratios, include:

- Size of the library staff per 100 students
- Library staff hours per 100 students
- Library hours of operation per 100 students
- Print volumes per student
- Current newspaper and magazine subscriptions per 100 students
- Library's operational expenditures per student

Table IV.1 - Bivariate Correlation Coefficients for Library Program Development Variables for Elementary Schools

Pearson Correlation (r) Significance (p) Number (n)	Library Staff Per 100 Students	Staff Hours Per 100 Students	Hours Library is Open Per 100 Students	Print Volumes Per Student	Magazine and Newspaper Subscriptions Per 100 Students	Library's Operating Expenditures Per Student
Library staff per 100 students	1.000 ---					
Staff hours per 100 students	.692 .000 266	1.000 ---				
Library hours of operation per 100 students	.870 .000 264	.577 .000 264	1.000 ---			
Print volumes per student	.196 .001 256	.249 .000 256	.212 .000 256	1.000 ---		

Magazine and newspaper subscriptions per 100 students	.403 .000 256	.467 .000 256	.461 .000 256	.271 .000 256	1.000 ---	
Library's operating expenditures per students	.477 .000 258	.218 .000 258	.499 .000 256	.138 .015 250	.331 .000 250	1.000 ---

1.2 Middle/Junior High School Libraries

At the middle/junior high school level, program development variables that correlated significantly included:

- Library staff per 100 students
- Library staff hours per 100 students
- Library hours of operation per 100 students
- Library's print volumes per student
- Library's video collection per 100 students
- Library's operational expenditures per student

The bivariate correlation coefficients between the program development variables were moderate to high.

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Table IV.2 - Bivariate Correlation Coefficients for Library Program Development Variables for Middle/Junior High Schools

Pearson Correlation (r) Significance (p) Number (n)	Library Staff Per 100 Students	Staff Hours Per 100 Students	Hours Library is Open Per 100 Students	Print Volumes Per Student	Magazine and Newspaper Subscriptions Per 100 Students	Library's Operating Expenditures Per Student
Library staff per 100 students	1.000 ---					
Staff hours per 100 students	.939 .000 103	1.000 ---				
Library hours of operation per 100 students	.759 .000 103	.736 .000 103	1.000 ---			
Print volumes per student	.483 .000 103	.528 .000 103	.569 .000 103	1.000 ---		

Video materials per 100 students	.244 .006 103	.197 .023 103	.405 .000 103	.341 .000 103	1.000 ---	
Library's operating expenditures per students	.394 .000 100	.426 .000 100	.460 .000 100	.404 .000 100	.225 .012 100	1.000 ---

1.3 High School Libraries

At the high school level, eight program development variables were identified as having positive, high, and significant correlations. These included:

- Library staff per 100 students
- Library staff hours per 100 students
- Library hours of operation per 100 students
- Library's budget per student
- Print volumes per student
- Current subscriptions to newspapers and magazines per 100 students
- Library software packages per 100 students
- Volumes purchased in 1999-00 per 100 students

The variables representing library collection play a significant role at the high school level. The four library collection variables constitute an important part of the high school library infrastructure. These represent both the range and variety of materials in the collection and the degree to which the collection is recent. At the high school level, the size of the print collection, the magazine and newspaper collection, and the software collection appear to be significant indicators of the library's program development. Equally important is the extent to which the collection is recent.

Table IV.3 - Bivariate Correlation Coefficients for Library Program Development Variables for High Schools

Pearson Correlation (r) Significance (p) Number (n)	Library Staff Per 100 Students	Staff Hours Per 100 Students	Hours Library Is Open to Students Per 100 Students	Print Volumes Per Student	Magazine and Newspaper Subscriptions Per 100 Students	Volumes Purchased in 99-00 Per 100 Students	Library Software Packages Per 100 Students	Library's Operating Expenditures Per Student
Library staff per 100 students	1.000 ---							

Staff hours per 100 students	.969 .000 129	1.000 ---						
Library hours of operation per 100 students	.865 .000 127	.864 .000 127	1.000 ---					
Print volumes per student	.761 .000 128	.728 .000 128	.765 .000 126	1.000 ---				
Magazine and newspaper subscriptions per 100 students	.767 .000 128	.722 .000 128	.411 .000 126	.765 .000 128	1.000 ---			
Volumes purchased in 99-00 per 100 students	.461 .000 105	.444 .000 105	.403 .000 104	.420 .000 105	.544 .000 105	1.000 ---		
Library software per 100 students	.209 .009 128	.219 .006 128	.319 .000 126	.294 .000 128	.354 .000 128	.208 .017 105	1.000 ---	
Operating expenditures per student	.374 .000 122	.386 .000 122	.365 .000 121	.266 .001 122	.440 .000 122	.861 .000 104	.221 .007 122	1.000 ---

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2. Leadership: Library Staff Involvement with Administrators, Teachers and Colleagues

The survey provided a list of professional activities that librarians and their staff are expected to perform and asked librarians to indicate how many hours per week they and their staff typically spend on each of these activities. The data revealed two groups of correlated activities. One set of activities related to library staff involvement with a range of school professionals and colleagues through meetings and committees. These activities represent the extent to which librarians constitute an integral part of the school and profession. Such activities were defined in previous studies as leadership activities.

2.1 Elementary School Libraries

The leadership activities that were positively and significantly correlated at the elementary school level include librarians':

- Meeting with the principal and other school administrators
- Attending faculty meetings
- Serving on the school's curriculum committee
- Meeting with colleagues in the district

Table IV.4 - Bivariate Correlation Coefficients for Time Spent on Leadership Activities by Elementary School Library Staff

Pearson Correlation (r) Significance (p) Number (n)	Meeting with Principal	Serving on Curriculum Committees	Meeting with Library Staff	Attending Faculty Meetings
Meeting with principal	1.000 ---			
Serving on curriculum committees	.349 .000 261	1.000 ---		

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Meeting with library staff	.340 .000 261	.250 .000 261	1.000 ---	
Attending faculty meetings	.360 .000 261	.446 .000 261	.209 .000 261	1.000 ---

2.2 Middle/Junior High School Libraries

At the middle/junior high school level, the leadership component of library staff included four variables:

- Meeting with the principal and other school administrators
- Attending faculty meetings
- Meeting with colleagues in the district
- Meeting with colleagues outside the district

Librarians' attendance of faculty meetings and meeting with the principal and other school administrators can be seen as recognition by administrators and teachers of the teaching role of librarians. The professional status of the librarian, enhanced through meetings with colleagues in and outside the district is of greater importance at the middle/junior high school level than at the elementary school level.

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Table IV.5 - Bivariate Correlation Coefficients for Time Spent on Leadership Activities by Middle/Junior High School Library Staff

Pearson Correlation (r) Significance (p) Number (n)	Meeting with Principal	Meeting with Library Staff in District	Meeting with Library Staff Outside District	Attending Faculty Meetings
Meeting with principal	1.000 ---			
Meeting with library staff in district	.285 .002 102	1.000 ---		

Meeting with library staff outside district	.384 .000 102	.236 .008 102	1.000 ---	
Attending faculty meetings	.427 .000 102	.279 .002 102	.143 .076 102	1.000 ---

2.3 High School Libraries

The leadership activities pursued by library staff at the high school level were similar to the activities at the middle/junior high school level but yielded higher correlation coefficients. The leadership variables identified as correlated include:

- Attending faculty meetings
- Meeting with principal and other school administrators
- Meeting with colleagues in the district
- Meeting with colleagues outside the district

The correlation between librarians meeting with the principal and other school administrators and attendance of faculty meetings is even higher at the high school level than at the middle/junior high school level. The correlation between meetings with the principal and meeting with colleagues outside the district is also higher, pointing to the recognition by school administration of the importance of librarians' professional contacts.

Table IV.6 - Bivariate Correlation Coefficients for Time Spent on Leadership Activities by High School Library Staff

Pearson Correlation (r) Significance (p) Number (n)	Meeting with Principal	Meeting with Library Staff in District	Meeting with Library Staff Outside District	Attending Faculty Meetings
Meeting with principal	1.000 ---			
Meeting with library staff in district	.345 .000 125	1.000 ---		

Meeting with library staff outside district	.789 .000 125	.351 .000 125	1.000 ---	
Attending faculty meetings	.782 .000 125	.578 .000 125	.771 .000 125	1.000 ---

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3. Library Staff Teaching Activities: Collaboration

The second group of activities that emerged to be correlated with each other represents the collaboration of librarians with teachers. In this role, the librarian exercises different aspects of teaching, typically targeted at or in collaboration with teachers and other school staff.

3.1 Elementary School Libraries

Four variables describing teaching activities involving librarians emerged at the elementary school level. These activities involved the librarian or library staff in:

- Planning instructional units with teachers
- Teaching cooperatively with teachers
- Providing training to teachers
- Assisting teachers in accessing and using information about state funded programs related to reading.

Although the correlation coefficients between the variables were significant, they were fairly low.

Table IV.7 - Bivariate Correlation Coefficients for Time Spent on Collaboration-Teaching Activities by Elementary School Library Staff

Pearson Correlation (r) Significance (p) Number (n)	Planning Instructional Units with Teachers	Teaching Cooperatively with Teachers	Providing Staff Development to Teachers	Assisting Teachers to Access and Utilize Information on State-Funded Programs

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Planning instructional units with teachers	1.000 ---			
Teaching cooperatively with teachers	.334 .000 261	1.000 ---		
Providing staff development to teachers	.243 .000 261	.137 .013 261	1.000 ---	
Assisting teachers to access and utilize information on state-funded programs	.253 .000 261	.209 .000 261	.164 .004 261	1.000 ---

3.2 Middle/Junior High School Libraries

The collaborative role of the librarian with teachers also emerged at the middle/junior high school level with the same set of variables. The bivariate correlation coefficients computed at the middle/junior high school level were higher than at the elementary school level, pointing to an increased importance of this role at the middle/junior high school level.

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Table IV.8 - Bivariate Correlation Coefficients for Time Spent on Collaboration-Teaching Activities by Middle/Junior High School Library Staff

Pearson Correlation (r) Significance (p) Number (n)	Planning Instructional Units with Teachers	Teaching Cooperatively with Teachers	Providing Staff Development to Teachers	Assisting Teachers to Access and Utilize Information on State-Funded Programs
Planning instructional units with teachers	1.000 ---			
Teaching cooperatively with teachers	.413 .000 102	1.000 ---		
Providing staff development to teachers	.335 .000 102	.217 .014 102	1.000 ---	
Assisting teachers to access and utilize information on state-funded programs	.288 .002 102	.274 .003 102	.346 .000 102	1.000 ---

3.3 High School Libraries

At the high school level, six activities representing librarian collaboration with teachers were identified as significant. These included:

- Planning instructional units with teachers
- Teaching cooperatively with teachers
- Providing training to teachers
- Providing information skills instruction to individuals or groups
- Identifying materials for instructional units developed by teachers
- Serving on curriculum committees

At the high school level, the collaborative-teaching role of the librarian is greatly expanded. In a teaching role, the high school librarian not only plans instructional units with teachers but also identifies materials for instruction. Furthermore, the high school librarian not only teaches cooperatively with teachers and trains them but also teaches information skills to students. The librarian's role in teaching information skills has been expanded with the integration of technology into schools. As libraries turned into centers of technology, librarians have become the most expert staff on information technology, training both teachers and students in technology-related information access and research techniques.

Table IV.9 - Bivariate Correlation Coefficients for Time Spent on Collaboration-Teaching Activities by High School Library Staff

Pearson Correlation (r) Significance (p) Number (n)	Planning Instructional Units with Teachers	Teaching Cooperatively with Teachers	Providing Staff Development to Teachers	Identifying Materials for Instructional Units	Teaching Information Literacy to Students	Serving on Curriculum Committee
Planning instructional units with teachers	1.000 ---					
Teaching cooperatively with teachers	.282 .001 125	1.000 ---				
Providing staff development to teachers	.387 .000 125	.170 .029 125	1.000 ---			
Identifying materials for instructional units	.156 .041 125	.205 .011 125	.185 .019 125	1.000 ---		
Providing information skills instruction to individuals or groups	.220 .007 125	.220 .007 125	.188 .018 125	.394 .000 125	1.000 ---	
Serving on curriculum committees	.313 .000 125	.179 .023 125	.343 .000 125	.286 .001 125	.236 .004 125	1.000 ---

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4. Library Technology

The introduction of technology into the school, typically through computer labs and the library, has transformed the library and its role in the school. The library has become a center of technology and the librarian a technology leader. Technology has also expanded the physical boundaries of the library. With technology in the library, teachers and students are able to access state, national, and world-wide resources. With the distribution of technology at the classroom level and the capability of classroom computers to access library resources, the library has reached every classroom and school office. No longer do students, teachers, or administrators have to be at the same physical location (i.e. the library) in order to access some of the library's resources. The library's catalog and its electronic collection can be accessed from multiple locations throughout the school.

The survey collected a wide range of data on libraries' technology resources: resources located in the library itself, those under the library's supervision, and those in the school with access to the library's networked resources. The technology area was divided into two sub-areas:

- technology in or under the library's supervision
- school technology that can access library resources

Each of these was examined separately.

Using the ratio of "per 100 students," six library technology variables were identified as being positively and highly correlated for elementary, middle/junior high, and high school libraries. These include:

- Computers in or under the library's supervision
- Library computers with Internet access
- Library computers with access to the library catalog
- Library computers with access to the library's databases
- Library computers with CD ROM drives
- Library computers with networked access to CD ROM resources

The bivariate correlation coefficients of these variables increased with educational level, as shown in the tables below.

4.1 Elementary School Libraries

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Table IV.10 - Bivariate Correlation Coefficients for Computers In or Under Library Supervision for Elementary School Libraries

Pearson Correlation (r) Significance (p) Number (n)	Total Number of Library Computers Per 100 Students	Library Computers with Internet Connection Per 100 Students	Library Computers with Access to Library Catalog Per 100 Students	Library Computers with Access to Library Databases Per 100 Students	Library Computers with CD ROM Drives Per 100 Students	Library Computers with Networked Access to CD ROM Resources Per 100 Students
Library computers per 100 students	1.000 ---					
Library computers with Internet connection per 100 students	.956 .000 263	1.000 ---				
Library computers with access to library catalog per 100 students	.759 .000 263	.789 .000 263	1.000 ---			
Library computers with access to library databases per 100 students	.420 .000 263	.355 .000 263	.367 .000 263	1.000 ---		
Library computers with CD ROM drives per 100 students	.982 .000 263	.969 .000 263	.757 .000 263	.399 .000 263	1.000 ---	
Library computers with networked access to CD ROM resources per 100 students	.529 .000 263	.565 .000 263	.567 .000 263	.359 .000 263	.542 .000 263	1.000 ---

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4.2 Middle/Junior High School Libraries

Table IV.11 - Bivariate Correlation Coefficients for Computers In or Under Library Supervision for Middle/Junior High School Libraries

Pearson Correlation (r) Significance (p) Number (n)	Library Computers Per 100 Students	Library Computers with Internet Connection Per 100 Students	Library Computers with Access to Library Catalog Per 100 Students	Library Computers with Access to Library Databases Per 100 Students	Library Computers with CD ROM Drives Per 100 Students	Library Computers with Networked Access to CD ROM Resources Per 100 Students
Library computers per 100 students	1.000 ---					
Library computers with Internet connection per 100 students	.972 .000 102	1.000 ---				
Library computers with access to library catalog per 100 students	.629 .000 102	.700 .000 102	1.000 ---			
Library computers with access to library databases per 100 students	.626 .000 102	.696 .000 102	.970 .000 102	1.000 ---		
Library computers with CD ROM drives per 100 students	.966 .000 102	.960 .000 102	.687 .000 102	.674 .000 102	1.000 ---	

Library computers with networked access to CD ROM resources per 100 students	.659 .000 102	.693 .000 102	.684 .000 102	.685 .000 102	.694 .000 102	1.000 ---

4.3 High School Libraries

The six library computer variables also correlated highly at the high school level.

Table IV.12 - Bivariate Correlation Coefficients for Computers In or Under Library Supervision for High School Libraries

Pearson Correlation (r) Significance (p) Number (n)	Total Number of Library Computers Per 100 Students	Library Computers with Internet Connection Per 100 Students	Library Computers with Access to Library Catalog Per 100 Students	Library Computers with Access to Library Databases Per 100 Students	Library Computers with CD ROM Drives Per 100 Students	Library Computers with Networked Access to CD ROM Resources Per 100 Students	Library Computers Connected to Modem Per 100 Students
Library computers per 100 students	1.000 ---						
Library computers with Internet connection per 100 students	.885 .000 128	1.000 ---					
Library computers with access to library catalog per 100 students	.869 .000 128	.807 .000 128	1.000 ---				
Library computers with access to library databases per 100 students	.777 .000 128	.834 .000 128	.861 .000 128	1.000 ---			

Library computers with CD ROM drives per 100 students	.902 .000 128	.838 .000 128	.900 .000 128	.769 .000 128	1.000 ---		
Library computers with networked access to CD ROM resources per 100 students	.711 .000 128	.620 .000 128	.694 .000 128	.567 .000 128	.726 .000 128	1.000 ---	
Library computers connected to modem per 100 students	.722 .000 128	.655 .000 128	.748 .000 128	.677 .000 128	.708 .000 128	.652 .000 128	1.000 ---

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Chapter 5
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App. A

5. School Technology Access to Library Resources

The distribution of technology throughout the school with access to networked library resources has further expanded the library's walls. Librarians were asked to report the number of computers in their respective schools that can access networked library resources and the characteristics of these computers from which library resources may be accessed. Seven variables emerged as highly and significantly correlated with each other. These included:

- School computers with access to networked library resources
- School computers with access to networked library resources that have Internet connections
- School computers with access to the library catalog
- School computers with access to the library's databases
- School computers with access to library computers that have CD ROM drives
- School computers with access to library's networked CD ROM resources

These variables were highly correlated with each other at all three educational levels. The correlation coefficients were the highest at the high school level.

Table IV.13 - Bivariate Correlation Coefficients for School Computers From Which Networked Library Resources May Be Accessed for Elementary School Libraries

Pearson Correlation (r) Significance (p) Number (n)	School Computers Per 100 Students	School Computers with Internet Connection Per 100 Students	School Computers with Access to Library Catalog Per 100 Students	School Computers with Access to Library Databases Per 100 Students	School Computers with CD ROM Drives Per 100 Students	School Computers with Networked Access to CD ROM Resources Per 100 Students	School Computers Connected to Modem Per 100 Students
School computers per 100 students	1.000 ---						

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School computers per Internet connection per 100 students	.903 .000 263	1.000 ---					
School computers with access to library catalog per 100 students	.736 .000 263	.770 .000 263	1.000 ---				
School computers with access to library databases per 100 students	.688 .000 263	.681 .000 263	.692 .000 263	1.000 ---			
School computers with CD ROM drives per 100 students	.881 .000 263	.853 .000 263	.743 .000 263	.660 .000 263	1.000 ---		
School computers with networked access to CD ROM resources per 100 students	.646 .000 263	.646 .000 263	.537 .000 263	.536 .000 263	.665 .000 263	1.000 ---	
School computers connected to modem per 100 students	.646 .000 263	.722 .000 263	.547 .000 263	.384 .000 263	.650 .000 263	.503 .000 263	1.000 ---

Table IV.14 - Bivariate Correlation Coefficients for School Computers From Which Networked Library Resources May Be Accessed for Middle/Junior High School Libraries

Pearson Correlation (r) Significance (p) Number (n)	School Computers Per 100 Students	School Computers with internet Connection Per 100 Students	School Computers with Access to Library Catalog Per 100 Students	School Computers with Access to Library Databases Per 100 Students	School Computers with CD ROM Drives Per 100 Students	School Computers with Networked Access to CD ROM Resource Per 100 Students
School computers per 100 students	1.000 --					
School computers with Internet connection per 100 students	.597 .000 102	1.000 ---				
School computers with access to library catalog per 100 students	.849 .000 102	.617 .000 102	1.000 ---			
School computers with access to library databases per 100 students	.859 .000 102	.638 .000 102	.964 .000 102	1.000 ---		
School computers with CD ROM drives per 100 students	.538 .000 102	.935 .000 102	.525 .000 102	.548 .000 102	1.000 ---	
School computers with networked access to CD ROM resources per 100 students	.617 .000 102	.600 .000 102	.356 .000 102	.371 .000 102	.656 .000 102	1.000 ---

Table IV.15 - Bivariate Correlation Coefficients for School Computers From Which Networked Library Resources May Be Accessed for High School Libraries

Pearson Correlation (r) Signficance (p) Number (n)	School Computers Per 100 Students	School Computers with Internet Connection Per 100 Students	School Computers with Access to Library Catalog Per 100 Students	School Computers with Access to Library Databases Per 100 Students	School Computers with CD ROM Drives Per 100 Students	School Computers with Networked Access to CD ROM Resources Per 100 Students	School Computers Connected to Modem Per 100 Students
School computers per 100 students	1.000 ---						
School computers with internet connection per 100 students	.937 .000 128	1.000 ---					
School computers with access to library catalog per 100 students	.883 .000 128	.869 .000 128	1.000 ---				
School computers with access to library databases per 100 students	.955 .000 128	.951 .000 128	.930 .000 128	1.000 ---			
School computers with CD ROM drives per 100 students	.910 .000 128	.944 .000 128	.925 .000 128	.923 .000 128	1.000 ---		
School computers with networked access to CD ROM resources per 100 students	.834 .000 128	.881 .000 128	.824 .000 128	.852 .000 128	.860 .000 128	1.000 ---	

School computers connected to modem per 100 students	.867 .000 128	.918 .000 128	.874 .000 128	.895 .000 128	.885 .000 128	.821 .000 128	1.000 ---

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App. A

6. Association Among Library Variables: Factor Analysis

While bivariate correlation identifies the strength of association between two variables, factor analysis expands the relationship beyond just two variables. The objective of factor analysis is to examine the relationship among library variables and create groupings of variables (factors). Generally, a procedure known as a varimax rotation is performed as part of the factor analysis for the purpose of accentuating these factor loadings. This makes it easier to determine which variables should be grouped together. Each grouping consists of variables that are most strongly associated with each other. The groupings created by a factor analysis and the strength of association among variables in a grouping are presented in a matrix that shows the correlation (factor loading) of each variable with that factor. Only factor loadings beyond a cutoff of +/- .600 are considered in describing and interpreting the groupings. The groupings created by factor analysis are expected to make sense as a group. However, it is possible for variables to be highly correlated with one another without there being an obvious explanation for that association.

6.1 Elementary School Factor Analysis

Elementary school library variables were entered into a factor analysis in order to identify variables that correlated highly with one another, forming variable groupings (factors). Only groupings with an eigenvalue of at least 1 were retained. The factor analysis resulted in nine factors that explained 67 percent of the variance in the elementary school library data.

Table IV.16 - Elementary School Library Factor Analysis

Elementary School Library Variables	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9
Library staff per 100 students	-	.844	-	-	-	-	-	-	-
Library staff hours per 100 students	-	.802	-	-	-	-	-	-	-
Library adult volunteer hours per 100 students	-	-	-	.522*	-	-	-	-	-

Library student volunteer hours per 100 students	-	-	-	-	-	-	-	.775	-
Library hours of operation per 100 students	-	.810	-	-	-	-	-	-	-
Planning instructional units with teachers	-	-	-	-	.641	-	-	-	-
Teaching cooperatively with teachers	-	-	-	-	.759	-	-	-	-
Providing staff development to teachers	-	-	-	-	-	.414*	-	-	-
Participating in cirriculum committee meetings	-	-	.728	-	-	-	-	-	-
Assisting teachers to access and utilize information on state funded programs	-	-	-	-	.701	-	-	-	-
Identifying materials for instructional units developed by teachers	-	-	-	-	-	-	.488*	-	-
Providing information skills instruction to individuals or groups	-	-	-	-	-	-	.653	-	-
Meeting with building and district staff	-	-	-	-	-	-	.622	-	-
Meeting with out of district library staff	-	-	-	-	-	-	-	-	.865

Meeting with principal	-	-	.648	-	-	-	-	-	-
Attending faculty meetings	-	-	.809	-	-	-	-	-	-
Library computers per 100 students	.923	-	-	-	-	-	-	-	-
Library computers with Internet connections per 100 students	.936	-	-	-	-	-	-	-	-
Library computers with access to catalog per 100 students	.854	-	-	-	-	-	-	-	-
Library computers with access to library databases	.536*	-	-	-	-	-	-	-	-
Library computers with CD ROM drives per 100 students	.932	-	-	-	-	-	-	-	-
Library computers with networked access to CD ROM resources per 100 students	.712	-	-	-	-	-	-	-	-
Library computers connected toa modem per 100 students	-	-	-	-	-	.704	-	-	-
Print volumes per student	-	.624	-	-	-	-	-	-	-

Current print subscriptions to newspapers and magazines per 100 students	-	.682	-	-	-	-	-	-	-
Library video materials per 100 students	-	.600	-	-	-	-	-	-	-
Library software packages per 100 students	-	-	-	-	-	.653	-	-	-
Volumes purchased in 1999-00 per 100 students	-	-	-	.831	-	-	-	-	-
Library operational expenditures per student	-	-	-	.816	-	-	-	-	-

* The highest factor loadings for these variables were lower than the +/-.600 cutoff point for inclusion in the groupings.

The following nine factors were formed for elementary school library variables:

- **Factor 1: Library Technology**

  Library computers per 100 students
  Library computers Internet connections per 100 students
  Library computers with access to catalog per 100 students
  Library computers with CD ROM drives per 100 students
  Library computers with networked access to CD ROM resources per 100 students

- **Factor 2: Program Development (Staffing, Hours of Operation, and Collection)**

  Library staff per 100 students
  Library staff hours per 100 students
  Library hours of operation per 100 students
  Print volumes per student
  Current print subscriptions to newspapers and magazines per 100 students
  Library video materials per 100 students

- **Factor 3: Leadership**

  Attending faculty meetings
  Meeting with principal
  Participating in curriculum committee meetings

- **Factor 4: Financial and Collection Resources**

  Volumes purchased in 1999-00 per 100 students

Library operational expenditures per student

- **Factor 5: Collaboration**

  Planning instructional units with teachers
  Teaching cooperatively with teachers
  Assisting teachers to access and utilize information on state funded programs

- **Factor 6: Modems and Software**

  Library modems per 100 students

  Library software packages per 100 students

- **Factor 7: Instruction and Meetings with Peers**

  Providing information skills instruction to individuals and groups
  Meeting with building and district library staff

- **Factor 8: Student Volunteers**

  Library student volunteer hours per 100 students

- **Factor 9: Out of District Meetings with Peers**

  Meeting with out of district library staff

To determine the relationship between the elementary school library variables and the percent of students who passed TAAS reading, the "TAAS performance" variable was added to the factor analysis. The factor analysis resulted in nine factors that differed somewhat from the factor analysis that included only library variables, as shown in the following matrix. The results of the factor analysis showed that elementary school students' TAAS performance was strongly associated with Factor 7. Factor 7 consists of two variables:

- Library adult volunteer hours per 100 students
- Library computers connected to a modem per 100 students

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Table IV.17 - Elementary School Library and TAAS Reading Factor Analysis

Elementary School Library Variables	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9
Library staff per 100 students	-	.871	-	-	-	-	-	-	-

Library staff hours per 100 students	-	.890	-	-	-	-	-	-	-
Library adult volunteer hours per 100 students	-	-	-	-	-	-	.438*	-	-
Library student volunteer hours per 100 students	-	-	-	-	-	.680	-	-	-
Library hours of operation per 100 students	-	.802	-	-	-	-	-	-	-
Planning instructional units with teachers	-	-	-	-	.613	-	-	-	-
Teaching cooperatively with teachers	-	-	-	-	.707	-	-	-	-
Providing staff development to teachers	-	-	-	.342*	-	-	-	-	-
Participating in curriculum committee meetings	-	-	-	.739	-	-	-	-	-
Assisting teachers to access and utilize information on state funded programs	-	-	-	-	.715	-	-	-	-
Identifying materials for instructional units developed by teachers	-	-	-	-	-	-	-	.717	-
Providing information skills instruction to individuals or groups	-	-	-	-	-	-	-	-	.709

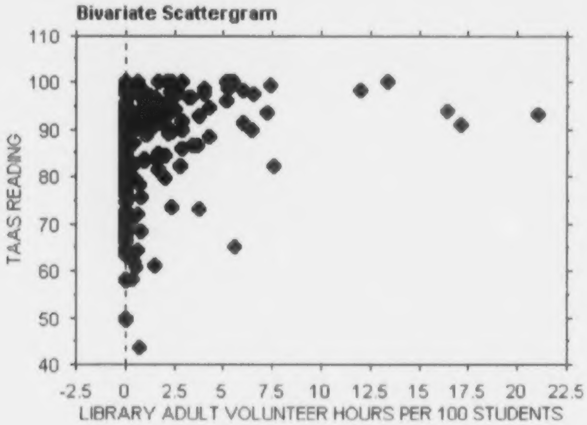
Meeting with building and district library staff	-	-	-	-	-	-	-	.582*	-
Meeting with out of district library staff	-	-	-	-	-	-	-	-	.659
Meeting with principal	-	-	-	.640	-	-	-	-	-
Attending faculty meetings	-	-	-	.825	-	-	-	-	-
Library computers per 100 students	.925	-	-	-	-	-	-	-	-
Library computers with Internet connections per 100 students	.918	-	-	-	-	-	-	-	-
Library computers with access to catalog per 100 students	.851	-	-	-	-	-	-	-	-
Library computers with access to library databases	.635	-	-	-	-	-	-	-	-
Library computers with CD ROM driver per 100 students	.921	-	-	-	-	-	-	-	-
Library computers with networkds access to CD ROM resources per 100 students	.811	-	-	-	-	-	-	-	-
Library computers connected to a modem per 100 students	-	-	-	-	-	-	.494*	-	-

Print volumes per student	-	.602	-	-	-	-	-	-	-
Current print subscriptions to newspapers and magazines per 100 students	-	.775	-	-	-	-	-	-	-
Library video materials per 100 students	-	*.423	-	-	-	-	-	-	-
Library software packages per 100 students	-	-	-	-	-	.780	-	-	-
Volumes purchased in 1999-00 per 100 students	-	-	.859	-	-	-	-	-	-
Library operational expenditures per student	-	-	.877	-	-	-	-	-	-
Percent of student meeting minimum expectations on TAAS Reading	-	-	-	*.103*	*.124*	-	*.747*	*-.134*	-

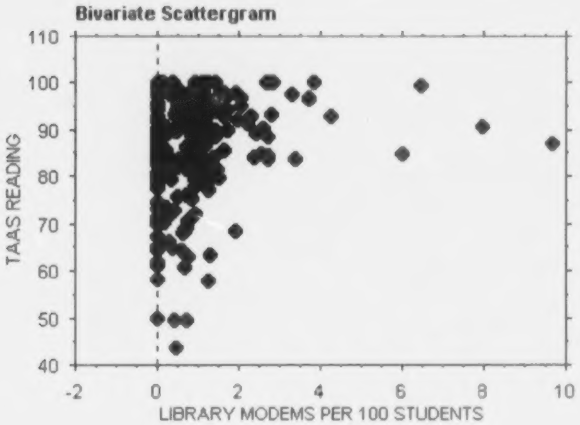
* The highest factor loadings for these variables were lower than the +/-.600 cutoff point for inclusion in the groupings.

The following graphs present the relationship between elementary school student TAAS performance and the two library variables associated with Factor 7: adult volunteer hours per 100 students, and library modems per 100 students. Each of the graphs illustrates a definite, but nonlinear relationship with TAAS. In each instance, as the library variable (used as an independent variable) increases in value, the variance in TAAS performance decreases and the percentage of students who meet minimum expectations on TAAS increases over what is seen at lower levels of the library variable (used as an independent variable). Greater consistency in TAAS performance is associated with higher values of the library (independent) variable.

Graph IV.1 – TAAS Reading and Adult Volunteer Hours Per 100 Students



Graph IV.2 – TAAS Reading and Library Modems Per 100 Students



In the next step, a factor analysis using both library and school variables was conducted. The purpose of this step was to create a set of factors that were uncorrelated with one another for use in a multiple regression procedure. Using a set of uncorrelated factors in a multiple regression analysis is important in order to avoid multicollinearity that can make the results of multiple regression highly unreliable. The factor analysis yielded 14 factors, as shown in the following table. The 14 factors have eighenvalues of 1 or higher.

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Table IV.18 - Factor Analysis: Elementary School Library and School Variables

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Library staff per 100 students	-	-	.811	-	-	-	-	-	-	-	-	-	-	-

Library staff hours per 100 students	-	-	.808	-	-	-	-	-	-	-	-	-	-	-
Library adult volunteer hours per 100 students	-	-	-	-	-	-	-	.395*	-	-	-	-	-	-
Library student volunteer hours per 100 students	-	-	-	-	-	-	-	-	-	-	-	.644	-	-
Library hours of operation per 100 students	-	-	.788	-	-	-	-	-	-	-	-	-	-	-
Planning instructional units with teachers	-	-	-	-	-	-	.631	-	-	-	-	-	-	-
Teaching cooperatively with teachers	-	-	-	-	-	-	.738	-	-	-	-	-	-	-
Providing staff development to teachers	-	-	-	-	-	-	-	-	-	.321*	-	-	-	-
Participating in curriculum committee meetings	-	-	-	-	.714	-	-	-	-	-	-	-	-	-
Assisting teachers to access and utilize information on state funded programs	-	-	-	-	-	-	.702	-	-	-	-	-	-	-
Identifiying materials for instructional units developed by teachers	-	-	-	-	-	-	-	-	.450*	-	-	-	-	-
Providing information skills instruction to individuals or groups	-	-	-	-	-	-	-	-	-	-	.477	-	-	-

Meeting with building and district library staff	-	-	-	-	.373*	-	-	-	-	-	-	-	-	-
Meeting with out of district library staff	-	-	-	-	-	-	-	-	-	-	-	-	.820	-
Meeting with principal	-	-	-	-	.673	-	-	-	-	-	-	-	-	-
Attending faculty meetings	-	-	-	-	.791	-	-	-	-	-	-	-	-	-
Library computers per 100 students	-	.933	-	-	-	-	-	-	-	-	-	-	-	-
Library computers with Internet connections per 100 students	-	.936	-	-	-	-	-	-	-	-	-	-	-	-
Library computers with access to catalog per 100 students	-	.858	-	-	-	-	-	-	-	-	-	-	-	-
Library computers with access to library databases	-	.524*	-	-	-	-	-	-	-	-	-	-	-	-
Library computers with CD ROM drives per 100 students	-	.938	-	-	-	-	-	-	-	-	-	-	-	-
Library computers with networked access to CD ROM resources per 100 students	-	.661	-	-	-	-	-	-	-	-	-	-	-	-
Library computers connected to a modem per 100 students	-	-	-	-	-	-	-	-	-	.669	-	-	-	-

Print volumes per student	-	-	.638	-	-	-	-	-	-	-	-	-	-	-
Current print subscriptions to newspapers and magazines per 100 students	-	-	.666	-	-	-	-	-	-	-	-	-	-	-
Library video materials per 100 students	-	-	.565*	-	-	-	-	-	-	-	-	-	-	-
Library software packages per 100 students	-	-	-	-	-	-	-	-	-	.650	-	-	-	-
Volumes purchased in 1999-00 per 100 students	-	-	-	-	-	-	-	.814	-	-	-	-	-	-
Library operational expenditures per student	-	-	-	-	-	-	-	.794	-	-	-	-	-	-
School computers per 100 students	.928	-	-	-	-	-	-	-	-	-	-	-	-	-
School computers with Internet connections per 100 students	.943	-	-	-	-	-	-	-	-	-	-	-	-	-
School computers with access to catalog per 100 students	.839	-	-	-	-	-	-	-	-	-	-	-	-	-
School computers with access to library databases	.750	-	-	-	-	-	-	-	-	-	-	-	-	-
School computers with CD ROM drivers per 100 students	.913	-	-	-	-	-	-	-	-	-	-	-	-	-

School computers with networked access CD ROM resources per 100 students	.749	-	-	-	-	-	-	-	-	-	-	-	-	-
School computers connected to a modem per 100 students	.725	-	-	-	-	-	-	-	-	-	-	-	-	-
School finance instruction percent	-	-	-	-	-	-	-	-	-	-	-	-	-	.686
School dollars per students	-	-	.688	-	-	-	-	-	-	-	-	-	-	-
Average teacher base salary	-	-	-	-	-	.763	-	-	-	-	-	-	-	-
Average teacher experience	-	-	-	-	-	.691	-	-	-	-	-	-	-	-
Teacher turnover ratio	-	-	-	-	-	-.590*	-	-	-	-	-	-	-	-
Percent teachers with advanced degrees	-	-	-	-	-	.531*	-	-	-	-	-	-	-	-
Student-teacher ratio	-	-	-.675	-	-	-	-	-	-	-	-	-	-	-
Percent of LEP students	-	-	-	.846	-	-	-	-	-	-	-	-	-	-
Percent of economically disadvantaged students	-	-	-	.846	-	-	-	-	-	-	-	-	-	-
Percent of white students	-	-	-	-.882	-	-	-	-	-	-	-	-	-	-
Percent of African American students	-	-	-	-	-	-	-	-	-.795	-	-	-	-	-

Percent of Hispanic students	-	-	-	.894	-	-	-	-	-	-	-	-	-	-
Percent of Native American students	-	-	-	-	-	-	.347*	-	-	-	-	-	-	-
Percent of Asian American students	-	-	-	-	-	-	-	-	-	-	.766	-	-	-

* Highest factor loading but lower than the .600 used as a cutoff.
Please note that this value is negative.
Extraction Method: Principal Components Analysis.
Rotation Method: Verimax and Kaiser Normalization

The factor analysis including both library and school variables resulted in 14 factors with eigenvalues of 1 or higher. These 14 factors are:

- **Factor 1: School Technology**

  School computers per 100 students
  School computers with Internet connections per 100 students
  School computers with access to catalog per 100 students
  School computers with access to library databases
  School computers with CD ROM drives per 100 students
  School computers with networked access to CD ROM resources per 100 students
  School computers connected to a modem per 100 students

- **Factor 2: Library Technology**

  Library computers per 100 students
  Library computers with Internet connections per 100 students
  Library computers with access to catalog per 100 students
  Library computers with CD ROM drives per 100 students
  Library computers with networked access to CD ROM resources per 100 students

- **Factor 3: Library and School Staffing, Print and Financial Resources**

  Library staff per 100 students
  Library staff hours per 100 students
  Library hours of operation per 100 students
  Volumes per students
  Current subscriptions to newspapers and magazines per 100 students
  School dollars per student
  Student-teacher ratio

- **Factor 4: Student Ethnic and Economic Composition**

Percent of LEP students
Percent of economically disadvantaged students
Percent of white students
Percent of Hispanic students

- **Factor 5: Leadership**

  Participating in curriculum committee meetings
  Meeting with principal
  Attending faculty meetings

- **Factor 6: Teacher Pay and Experience**

  Average teacher base salary
  Average teacher experience

- **Factor 7: Collaboration**

  Planning instructional units with teachers
  Teaching cooperatively with teachers
  Assisting teachers to access and utilize information on state funded programs

- **Factor 8: Library Financial Resources**

  Volumes purchased in 1999-00 per 100 students
  Library operational expenditures per student

- **Factor 9: African American Students**

  Percent of African American students

- **Factor 10: Library Technology Resources**

  Library computers connected to a modem per 100 students
  Library software packages per 100 students

- **Factor 11: Asian American Students**

  Percent of Asian American students

- **Factor 12: Student Volunteers**

  Library student volunteer hours per 100 students

- **Factor 13: Meeting with Out of District Librarians**

  Meetings with out of district librarians

- **Factor 14: School Instructional Finance**

  Percent of school funds allocated to instruction

6.2 Middle/Junior High School Factor Analysis

The objective of the middle/junior high school factor analysis was to identify library variables correlated highly with one another, and form variable groupings (factors). Only groupings with an eigenvalue of at least 1 were retained. The factor analysis performed on middle/junior high school variables resulted in nine factors that explained 74 percent of the variance in the library data. The factor analysis produces a matrix that shows the correlation (factor loading) of each variable with that factor. The nine factors and the loadings associated with each are also listed.

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Table IV.19 - Middle/Junior High School Library Factor Analysis

Middle/Junior High School Library Variables	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9
Library staff per 100 students	-	.930	-	-	-	-	-	-	-
Libaray staff hours per 100 students	-	.943	-	-	-	-	-	-	-
Library adult volunteer hours per 100 students	-	-	-	-	-	-	-	-	.433*
Library student volunteer hours per 100 students	-	-	-	-	-	.688	-	-	-
Library hours of operation per 100 students	-	.725	-	-	-	-	-	-	-
Planning instructional units with teachers	-	-	.613	-	-	-	-	-	-
Teaching cooperatively with teachers	-	-	-	-	-	-	-	-.479*	-
Providing staff development to teachers	-	-	.674	-	-	-	-	-	-

Participating in curriculum committee meetings	-	-	-	-	-	-	.625	-	-
Assisting teachers to access and utilize information on state funded programs	-	-	.753	-	-	-	-	-	-
Identifying materials for instructional units developed by teachers	-	-	-	-	.812	-	-	-	-
Providing information skills instruction to individuals or groups	-	-	-	-	.831	-	-	-	-
Meeting with building and district library staff	-	-	-	-	-	.831	-	-	-
Meeting with out of district library staff	-	-	.659	-	-	-	-	-	-
Meeting with principal	-	-	.623	-	-	-	-	-	-
Attending faculty meetings	-	-	-	-.426*	-	-	-	-	-
Library computers per 100 students	.877	-	-	-	-	-	-	-	-
Library computers with Internet connections per 100 students	.922	-	-	-	-	-	-	-	-
Library computer with access to catalog per 100 students	.893	-	-	-	-	-	-	-	-

Library computers with access to library databates	.893	-	-	-	-	-	-	-	-
Library computers with CD ROM per 100 students	.897	-	-	-	-	-	-	-	-
Library computers with networked access to CD ROM resources per 100 students	.802	-	-	-	-	-	-	-	-
Library computers connected to a modem per 100 students	-	-	-	-	-	-	.606	-	-
Print volumes per student	-	.600	-	-	-	-	-	-	-
Current print subscriptions to newspapers and magazines per 100 students	-	-	-	-	-	-	-	.780	-
Library video materials per 100 students	-	-	-.355*	-	-	-	-	-	-
Library software packages per 100 students	-	-	-	-	-	-	-	-	.893
Volumes purchased in 1999-00 per 100 students	-	-	-	.747	-	-	-	-	-
Library operational expenditures per student	-	-	-	.775	-	-	-	-	-

Percent of students who met minimum expectations on TAAS reading	-	-	-	.315	.187	.367	-.308	.365	-.299

* The highest factor loadings for these variables were lower than the +/-.600 cutoff point for inclusion in the groupings.

The following nine factors were formed for middle/junior high school library variables:

- **Factor 1: Library Technology**

  Library computers per 100 students
  Library computers with Internet connections per 100 students
  Library computers with access to catalog per 100 students
  Library computers with access to library databases
  Library computers with CD ROM drives per 100 students
  Library computers with networked access to CD ROM resources per 100 students

- **Factor 2: Program Development (Staffing, Hours of Operation, and Print)**

  Library staff per 100 students
  Library staff hours per 100 students
  Library hours of operation per 100 students
  Print volumes per student

- **Factor 3: Collaboration and Training**

  Planning instructional units with teachers
  Providing staff development to teachers
  Assisting teachers to access and utilize information on state funded programs
  Meeting with out of district library staff
  Meeting with principal

- **Factor 4: Financial and Collection Resources**

  Volumes purchased in 1999-00 per 100 students
  Library operational expenditures per student

- **Factor 5: Teaching**

  Providing information skills instruction to individuals and groups
  Identifying materials for instructional units developed by teachers

- **Factor 6: Student Volunteers and Peer Meetings**

  Library student volunteer hours per 100 students

Meeting with building and district library staff

- **Factor 7: Involvement with Faculty**

  Attending faculty meetings
  Library computers connected to a modem per 100 students

- **Factor 8: Subscription**

  Current subscriptions to newspapers and magazines per 100 students

- **Factor 9: Software Resources**

  Library software packages per 100 students

To determine the relationship between the nine middle/junior high school library factors and students' TAAS performance, the "TAAS performance" variable was added to the factor analysis. This resulted in nine factors that had slightly different groupings. The results of the factor analysis showed that middle/junior high school students' TAAS performance was primarily associated with Factor 6 and Factor 8.

Factor 6 consists of:

- Library student volunteer hours per 100 students

Factor 8 includes:

- Current subscriptions to newspapers and magazines per 100 students

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Table IV.20 - Middle/Junior High School Library and TAAS Reading Factor Analysis

Middle/Junior High School Library Variables	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9
Library staff per 100 students	-	.929	-	-	-	-	-	-	-
Library staff hours per 100 students	-	.942	-	-	-	-	-	-	-
Library adult volunteer hours per 100 students	-	-	-	-	-	-	-	.456*	.433*

Library student volunteer hours per 100 students	-	-	-	-	-	.833	-	-	-
Library hours of operation per 100 students	-	.753	-	-	-	-	-	-	-
Planning instructional units with teachers	-	-	.492*	-	-	-	-	-	-
Teaching cooperatively with teachers	-	-	-	-	-	-	-	-.543*	-
Providing staff development to teachers	-	-	.805	-	-	-	-	-	-
Participating in curriculum committee meetings	-	-	.598*	-	-	-	-	-	-
Assisting teachers to access and utilize information on state funded programs	-	-	.606	-	-	-	-	-	-
Identifying materials for instructional units developed by teachers	-	-	-	.805	-	-	-	-	-
Providing information skills instruction to individuals or groups	-	-	-	.808	-	-	-	-	-
Meeting with building and district library staff	-	-	-	-	-	-	.688	-	-
Meeting with out of district library staff	-	-	.610	-	-	-	-	-	-

Meeting with principal	-	-	.658	-	-	-	-	-	-
Attending faculty meetings	-	-	-	-	-	-	.666	-	-
Library computers per 100 students	.867	-	-	-	-	-	-	-	-
Library computers with Internet connections per 100 students	.913	-	-	-	-	-	-	-	-
Library computers with access to catalog per 100 students	.898	-	-	-	-	-	-	-	-
Library computers with access to library databases	.898	-	-	-	-	-	-	-	-
Library computers with CD ROM drives per 100 students	.888	-	-	-	-	-	-	-	-
Library computers with networked access to CD ROM resources per 100 students	.804	-	-	-	-	-	-	-	-
Library computer connected to a modem per 100 students	-	-	-	-	-	.572*	-	-	-
Print volumes per student	-	.615	-	-	-	-	-	-	-
Current print subscriptions to newspapers and magazines per 100 students	-	-	-	-	-	-	-	.698	-

Library video materials per 100 students	-	.338*	-	-	-	-	-	-	-
Library software packages per 100 students	-	-	-	-	-	-	-	-	.863
Volumes purchased in 1999-00 per 100 students	-	-	-	-	.750	-	-	-	-
Library operational expenditures per student	-	-	-	-	.718	-	-	-	-
Percent of students who met minimum expectation on TAAS reading	-	-	-	*.315*	*.187*	*.367*	*-.299*	*.365*	*-.299*

* The highest factor loadings for these variables were lower than the +/-.600 cutoff point for inclusion in the groupings.

However, the relationship between these two variables and TAAS performance is weak. This is reflected in the low factor loadings for the TAAS variable. Indeed, none of these variables has a correlation with TAAS that is significantly different from zero.

In the next step, a factor analysis using both library and school variables was conducted. The purpose of this step was to create a set of factors that are uncorrelated with one another for use in a multiple regression procedure. The factor analysis yielded 15 factors, as shown in the following table. The 15 factors have eighenvalues of 1 or higher.

Table IV.21 - Factor Analysis: Middle/Junior High School Library and School Variables

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Library staff per 100 students	-	.778	-	-	-	-	-	-	-	-	-	-	-	-	-
Library staff hours per 100 students	-	.818	-	-	-	-	-	-	-	-	-	-	-	-	-

Library adult volunteer hours per 100 students	-	-	-	-	-	-	-	-	-	-	-	.658	-	-	-
Library student volunteer hours per 100 students	-	-	-	-	-	-	-	-	.781	-	-	-	-	-	-
Library hours of operation per 100 students	-	.765	-	-	-	-	-	-	-	-	-	-	-	-	-
Planning instructional units with teachers	-	-	-	-	-	-	-	-	-	-	.664	-	-	-	-
Teaching cooperatively with teachers	-	-	-	-	-	-	-	-	-	-	.668	-	-	-	-
Providing staff development to teachers	-	-	-	-	.573*	-	-	-	-	-	-	-	-	-	-
Participating in curriculum committee meetings	-	-	-	-	-	-	-	-	-	-	-	-	-	.626	-
Assisting teachers to access and utilize information on state funded programs	-	-	-	-	.757	-	-	-	-	-	-	-	-	-	-
Indentifying materials for instructional units developed by teachers	-	-	-	-	-	-	.799	-	-	-	-	-	-	-	-
Providing information skills instruction to individuals or groups	-	-	-	-	-	-	.821	-	-	-	-	-	-	-	-

Meeting with building and district library staff	-	-	-	-	-	-	-	-	.552*	-	-	-	-	-	-
Meeting with out of district library staff	-	-	-	-	.778	-	-	-	-	-	-	-	-	-	-
Meeting with principal	-	-	-	-	.661	-	-	-	-	-	-	-	-	-	-
Attending faculty meetings	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.767
Library computers per 100 students	.899	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Library computers with Internet connections per 100 students	.936	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Library computers with access to catalog per 100 students	.861	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Library computers with access to library databases	.862	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Library computers with CD ROM drives per 100 students	.914	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Library computers with networked access to CD ROM resources per 100 students	.778	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Library computers connected to a modem per 100 students	-	-	-	-	-	-	-	-	.447*	-	-	-	-	-	-

Print volumes per student	-	.682	-	-	-	-	-	-	-	-	-	-	-	-	-
Current print subscriptions to newspapers and magazines per 100 students	-	-	-	-	-	-	-	-	-	-	-	-	-	.489*	-
Library video materials per 100 students	-	.308*	-	-	-	-	-	-	-	-	-	-	-	-	-
Library software packages per 100 students	-	-	-	-	-	-	-	-	-	-	-	.620	-	-	-
Volumes purchased in 1999-00 per 100 students	-	.638	-	-	-	-	-	-	-	-	-	-	-	-	-
Library operational expenditures per students	-	.675	-	-	-	-	-	-	-	-	-	-	-	-	-
School computers per 100 students	-	-	.868	-	-	-	-	-	-	-	-	-	-	-	-
School computers with Internet connections per 100 students	-	-	.685	-	-	-	-	-	-	-	-	-	-	-	-
School computers with access to catalog per 100 students	-	-	.957	-	-	-	-	-	-	-	-	-	-	-	-
School computers with access to library databases	-	-	.954	-	-	-	-	-	-	-	-	-	-	-	-
School computers with CD ROM drives per 100 students	-	-	.607	-	-	-	-	-	-	-	-	-	-	-	-

School computers with networked access to CD ROM resources per 100 students	-	-	-	-	-	.751	-	-	-	-	-	-	-	-	-
School computers connected to a modem per 100 students	-	-	-	-	-	.823	-	-	-	-	-	-	-	-	-
School finance instruction percent	-	-	-	-	-	-	-	-	-	-	-	-.502*	-	-	-
School dollars per student	-	.821	-	-	-	-	-	-	-	-	-	-	-	-	-
Average teacher base salary	-	-	-	-	-	-	-	-	-	.765	-	-	-	-	-
Average teacher experience	-	-	-	-	-	-	-	-	-	.696	-	-	-	-	-
Teacher turnover ratio	-	-	-	-	-	-	-	-	-	-	-	-	-	.727	-
Percent teachers with advanced degrees	-	-	-	-	-	-	-	-	-	.539*	-	-	-	-	-
Student-teacher ratio	-	-.775	-	-	-	-	-	-	-	-	-	-	-	-	-
Percent of LEP students	-	-	-	-.806	-	-	-	-	-	-	-	-	-	-	-
Percent of economically disadvantaged students	-	-	-	-.916	-	-	-	-	-	-	-	-	-	-	-
Percent of white students	-	-	-	.897	-	-	-	-	-	-	-	-	-	-	-
Percent of African American students	-	-	-	-	-	-	-	-	-	-	-	-	.779	-	-

Percent of Hispanic students	-	-	-	-.938	-	-	-	-	-	-	-	-	-	-	-
Percent of Native American students	-	-	-	-	-	-	-	.794	-	-	-	-	-	-	-
Percent of Asian American students	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.504*

* Highest factor loading but lower than the .600 used as a cutoff.
Please note that these values are negative.
Extraction Method: Principal Components Analysis.
Rotation Method: Verimax and Kaiser Normalization

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The factor analysis including both library and school variables resulted in 15 factors with eigenvalues of 1 or higher. These 15 factors are:

- **Factor 1: School Technology A**

  School computers per 100 students
  School computers with Internet connections per 100 students
  School computers with access to catalog per 100 students
  School computers with access to library databases
  School computers with CD ROM drives per 100 students
  School computers with networked access to CD ROM resources per 100 students

- **Factor 2: Library and School Staffing, Print and Financial Resources**

  Library staff per 100 students
  Library staff hours per 100 students
  Library hours of operation per 100 students
  Volumes per students
  Volumes purchased in 1999-00 per 100 students
  Library operational expenditures per student
  School dollars per student
  Student-teacher ratio

- **Factor 3: Library Technology**

  Library computers per 100 students
  Library computers with Internet connections per 100 students
  Library computers with access to catalog per 100 students
  Library computers with access to library databases
  Library computers with CD ROM drives per 100 students

- **Factor 4: Student Ethnic and Economic Composition**

Percent of LEP students
Percent of economically disadvantaged students
Percent of white students
Percent of Hispanic students

- **Factor 5: Leadership**

  Meeting with out of district library staff
  Meeting with principal
  Assisting teachers to access and utilize information on state funded programs

- **Factor 6: School Technology B**

  School computers with networked access to CD ROM resources per 100 students
  School computers connected to a modem per 100 students

- **Factor 7: Planning with and Training Teachers**

  Identifying materials for instructional units developed by teachers
  Providing information skills instruction to individuals or groups

- **Factor 8: Native American Students**

  Percent of Native American students

- **Factor 9: Student Volunteers**

  Library student volunteer hours per 100 students

- **Factor 10: Collaboration**

  Planning instructional units with teachers
  Teaching cooperatively with teachers

- **Factor 11: Teacher Pay and Experience**

  Average teacher base salary
  Average teacher experience

- **Factor 12: Adults Volunteers and Software**

  Library adult volunteer hours per 100 students
  Library software packages per 100 students

- **Factor 13: African American Students**

  Percent of African American students

- **Factor 14: Participation in Curriculum Meetings and Teacher Turnover**

Participating in curriculum committee meetings
Teacher turnover ratio

- **Factor 15: Faculty Meetings**

Attending faculty meetings

6.3 High School Factor Analysis

A factor analysis was used to identify high school library variables that correlated highly with one another and formed variable groupings (factors). Only groupings with an eigenvalue of at least 1 were retained. This resulted in eight factors that explained 75 percent of the variance in the high school library data. The eight factors and the loadings associated with each are listed below.

Table IV.22 - High School Library Factor Analysis

High School Library Variables	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8
Library staff per 100 students	-	.924	-	-	-	-	-	-
Library staff hours per 100 students	-	.924	-	-	-	-	-	-
Library adult volunteer hours per 100 students	-	-	-	.798	-	-	-	-
Library student volunteer hours per 100 students	-	-	-	-	-	-	-	.602
Library hours of operation per 100 students	-	.803	-	-	-	-	-	-
Planning instructional units with teachers	-	-	-	-	-	.729	-	-
Teaching cooperatively with teachers	-	-	-	-	.624	-	-	-
Providing staff development to teachers	-	-	-	-	-	.780	-	-

Participating in curriculum committee meetings	-	-	-	-	-	.467*	-	-
Assisting teachers to access and utilize information on state funded programs	-	-	-	-	-	-	.695	-
Identifying materials for instructional units developed by teachers	-	-	-	-	.601	-	-	-
Providing information skills instruction to individuals or groups	-	-	-	-	.787	-	-	-
Meeting with building and district library staff	-	-	.619	-	-	-	-	-
Meeting with out of district library staff	-	-	.894	-	-	-	-	-
Meeting with principal	-	-	.877	-	-	-	-	-
Attending faculty meetings	-	-	.944	-	-	-	-	-
Library computers per 100 students	.911	-	-	-	-	-	-	-
Library computers with Internet connections per 100 students	.747	-	-	-	-	-	-	-
Library computers with access to catalog per 100 students	.836	-	-	-	-	-	-	-

Library computers with access to library databases	.819	-	-	-	-	-	-	-
Library computers with CD ROM drives per 100 students	.893	-	-	-	-	-	-	-
Library computers with networked access to CD ROM resources per 100 students	.826	-	-	-	-	-	-	-
Library computers connected to a modem per 100 students	.684	-	-	-	-	-	-	-
Print volumes per student	-	.688	-	-	-	-	-	-
Current print subscriptions to newspapers and magazines per 100 students	-	.731	-	-	-	-	-	-
Library video materials per 100 students	-	-	-	-	-	-	-.474*	-
Library software packages per 100 students	-	-	-	-	-	-	.459*	-
Volumes purchased in 1999-00 per 100 students	-	-	-	.774	-	-	-	-
Library operational expenditures per student	-	-	-	.762	-	-	-	-

* The highest factor loadings for these variables were lower than the +/-.600 cutoff point for inclusion in the groupings.

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The following eight factors were formed for high school library variables:

- **Factor 1: Library Technology**

  Library computers per 100 students
  Library computers with Internet connections per 100 students
  Library computers with access to catalog per 100 students
  Library computers with access to library databases
  Library computers with CD ROM drives per 100 students
  Library computers with networked access to CD ROM resources per 100 students
  Library computers connected to a modem per 100 students

- **Factor 2: Program Development (Staffing and Hours of Operation)**

  Library staff per 100 students
  Library staff hours per 100 students
  Library hours of operation per 100 students

- **Factor 3: Leadership**

  Meeting with building and district library staff
  Meeting with out of district library staff
  Meeting with principal
  Attending faculty meetings

- **Factor 4: Resources**

  Volumes purchased in 1999-00 per 100 students
  Library operational expenditures per student
  Library adult volunteer hours per 100 students

- **Factor 5: Teaching**

  Teaching cooperatively with teachers
  Providing information skills instruction to individuals and groups
  Identifying materials for instructional units developed by teachers

- **Factor 6: Collaboration**

  Providing staff development to teachers
  Planning instructional units with teachers

- **Factor 7: Assisting Teachers**

  Assisting teachers to access and utilize information on state funded programs

- **Factor 8: Student Volunteers**

  Library student volunteer hours per 100 students

To determine the relationship between the eight high school library factors and high school students' TAAS performance, the "TAAS performance" variable was added to the factor analysis. The results of the factor analysis showed that high school students' TAAS performance had the strongest association with Factor 6 which represents collaboration between librarians and teachers and consists of two library variables:

- Providing staff development to teachers
- Planning instructional units with teachers

Table IV.23 - High School Library and TAAS Reading Factor Analysis

High School Library Variables	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8
Library staff per 100 students	-	.922	-	-	-	-	-	-
Library staff hours per 100 students	-	.922	-	-	-	-	-	-
Library adult volunteer hours per 100 students	-	-	-	.798	-	-	-	-
Library student volunteer hours per 100 students	-	-	-	-	-	-	-	.581*
Library hours of operation per 100 students	-	.802	-	-	-	-	-	-
Planning instructionals units with teachers	-	-	-	-	-	.676	-	-
Teaching cooperatively with teachers	-	-	-	-	.640	-	-	-
Providing staff development to teachers	-	-	-	-	-	.772	-	-
Participating in curriculum committee meetings	-	-	-	.455*	-	-	-	-
Assisting teachers to access and utilize information on state funded programs	-	-	-	-	-	-	-.610	-

Identifying materials for instructional units developed by teachers	-	-	-	-	.599*	-	-	-
Providing information skills instruction to individuals or groups	-	-	-	-	.771	-	-	-
Meeting with building and district library staff	-	-	.619	-	-	-	-	-
Meeting with out of district library staff	-	-	.896	-	-	-	-	-
Meeting with principal	-	-	.886	-	-	-	-	-
Attending faculty meetings	-	-	.943	-	-	-	-	-
Library computers per 100 students	.911	-	-	-	-	-	-	-
Library computers with Internet connections per 100 students	.742	-	-	-	-	-	-	-
Library computers with access to catalog per 100 students	.835	-	-	-	-	-	-	-
Library computers with access to library databases	.818	-	-	-	-	-	-	-
Library computers with CD ROM drives per 100 students	.894	-	-	-	-	-	-	-

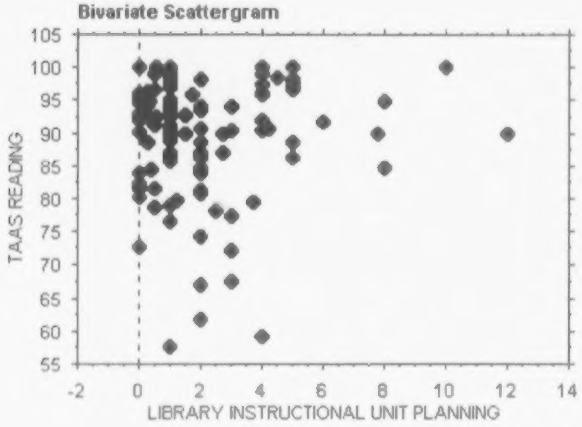
Library computers with networked access to CD ROM resources per 100 students	.684	-	-	-	-	-	-	-
Library computers connected to a modem per 100 students	.684	-	-	-	-	-	-	-
Print volumes per student	-	.683	-	-	-	-	-	-
Current print subscriptions to newspapers and magazines per 100 students	-	.734	-	-	-	-	-	-
Library video materials per 100 students	-	-	-	-	-	-	.457*	-
Library software packages per 100 students	-	-	-	-	-	-	-.455*	-
Volumes purchased in 1999-00 per 100 students	-	-	-	.769	-	-	-	-
Library operational expenditures per student	-	-	-	.761	-	-	-	-
Percent of students who met minimum expectations on TAAS reading	-	*.222*	-	*.191*	-	*.461*	*.412*	-

* The highest factor loadings for these variables were lower than the +/-.600 cutoff point for inclusion in the groupings.

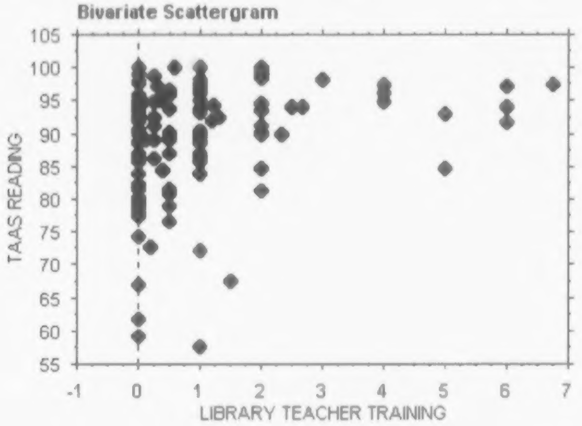
The relationship between these two library variables in Factor 6 and TAAS performance is not linear, as shown in the following graphs. However, important nonlinear relationships often exist between variables. As can be seen from the following graphs, the variation in TAAS performance tends to decrease as the independent library variable increases in value. In particular, TAAS performance tends to increase and become more consistent as library staff spend more time planning instructional units with teachers and providing training to teachers.

- Planning instructional units with teachers, and
- Providing staff development to teachers or other school staff.

Graph IV.3 – TAAS Reading and Library Instructional Unit Planning



Graph IV.4 – TAAS Reading and Library Teacher Training



In the next step, a factor analysis using both library and school variables was conducted. The purpose of this step was to create a set of factors that are uncorrelated with one another for use in a multiple regression procedure. The factor analysis yielded 12 factors, as shown in the following table. The 12 factors have eighenvalues of 1 or higher.

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Table IV.24 - Factor Analysis: Library and School Variables

Variables	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9	Factor 10	Factor 11	Factor 12

Library staff per 100 students	-	.910	-	-	-	-	-	-	-	-	-	-
Library staff hours per 100 students	-	.928	-	-	-	-	-	-	-	-	-	-
Library adult volunteer hours per 100 students	.643	-	-	-	-	-	-	-	-	-	-	-
Library student volunteer hours per 100 students	-	-	-	-	-	-	-	-	-	-	-	.588*
Library hours of operation per 100 students	-	.830	-	-	-	-	-	-	-	-	-	-
Planning instructional units with teachers	-	-	-	-	-	-	.751	-	-	-	-	-
Teaching cooperatively with teachers	-	-	-	-	-	-	-	-	-	.673	-	-
Providing staff development to teachers	-	-	-	-	-	-	.783	-	-	-	-	-
Participating in curriculum committee meetings	.519*	-	-	-	-	-	-	-	-	-	-	-
Assisting teachers to access and utilize information on state funded programs	-	-	-	-	-	-	-	-	.569*	-	-	-
Identifying materials for instructional units developed by teachers	-	-	-	-	-	-	-	.620	-	-	-	-

Providing information skills instruction to individuals or groups	-	-	-	-	-	-	-	.764	-	-	-	-
Meeting with building and district library staff	-	-	-	-	.577*	-	-	-	-	-	-	-
Meeting with out of district library staff	-	-	-	-	.888	-	-	-	-	-	-	-
Meeting with principal	-	-	-	-	.903	-	-	-	-	-	-	-
Attending faculty meetings	-	-	-	-	.930	-	-	-	-	-	-	-
Library computers per 100 students	-	-	.888	-	-	-	-	-	-	-	-	-
Library computers with Internet connections per 100 students	-	-	.735	-	-	-	-	-	-	-	-	-
Library computers with access to catalop per 100 students	-	-	.854	-	-	-	-	-	-	-	-	-
Library computers with access to library databases	-	-	.834	-	-	-	-	-	-	-	-	-
Library computers with CD ROM drives per 100 students	-	-	.872	-	-	-	-	-	-	-	-	-

Library computers with networked access to CD ROM resources per 100 students	-	-	.814	-	-	-	-	-	-	-	-	-
Library computers connected to a modem per 100 students	-	-	.596*	-	-	-	-	-	-	-	-	-
Print volumes per students	-	.740	-	-	-	-	-	-	-	-	-	-
Current print subscriptions to newspapers and magazines per 100 students	-	.742	-	-	-	-	-	-	-	-	-	-
Library video materials per 100 students	-	-	-	-	-	-	-	-	-.478*	-	-	-
Library software packages per 100 students	-	-	-	-	-	-	-	-	-	-	.549	-
Volumes purchased in 1999-00 per 100 students	.736	-	-	-	-	-	-	-	-	-	-	-
Library operational expenditures per student	.789	-	-	-	-	-	-	-	-	-	-	-
School computers per 100 students	.908	-	-	-	-	-	-	-	-	-	-	-
School computers with Internet connections per 100 students	.956	-	-	-	-	-	-	-	-	-	-	-

School computers with access to catalog per 100 students	.935	-	-	-	-	-	-	-	-	-	-	-
School computers with access to library databases	.938	-	-	-	-	-	-	-	-	-	-	-
School computers with CD ROM drives per 100 students	.951	-	-	-	-	-	-	-	-	-	-	-
School computers with networked access to CD ROM resources per 100 students	.909	-	-	-	-	-	-	-	-	-	-	-
School computers connected to a modem per 100 students	.878	-	-	-	-	-	-	-	-	-	-	-
School finance instruction percent	-	-	-	-	-	-	-	-	-	-	.730	-
School dollars per student	-	.822	-	-	-	-	-	-	-	-	-	-
Average teacher base salary	-	-	-	-	-	-	-	-	-	-.574*	-	-
Average teacher experience	-	-	-	-	-	.624	-	-	-	-	-	-
Teacher turnover ratio	-	-	-	-	-	-.725	-	-	-	-	-	-
Percent teachers with advanced degrees	-	-	-	-	-	.648	-	-	-	-	-	-

Student-teacher ratio	-	-.761	-	-	-	-	-	-	-	-	-	-
Percent of LEP students	-	-	-	.796	-	-	-	-	-	-	-	-
Percent of economically disadvantaged students	-	-	-	.855	-	-	-	-	-	-	-	-
Percent of white students	-	-	-	-.863	-	-	-	-	-	-	-	-
Percent of African American students	-	-	-	-	-	-	-	-	.609	-	-	-
Percent of Hispanic students	-	-	-	.909	-	-	-	-	-	-	-	-
Percent of Native American students	-	-	-	-	-	-	-	-	-	.449*	-	-
Percent of Asian American students	-	-	-	-	-	-	-	-	.364*	-	-	-

* Highest factor loading but lower than the .600 used as a cutoff.
Extraction Method: Principal Components Analysis.
Rotation Method: Verimax and Kaiser Normalization

The factor analysis including both library and school variables resulted in 12 factors with eigenvalues of 1 or higher. However, only 11 of the 12 factors had loadings greater than .600. These 11 factors are:

- **Factor 1: School Technology**

  Volumes purchased in 1999-00 per 100 students
  Library operational expenditures per student
  School computers per 100 students
  School computers with Internet connections per 100 students
  School computers with access to catalog per 100 students
  School computers with access to library databases
  School computers with CD ROM drives per 100 students
  School computers with networked access to CD ROM resources per 100 students
  School computers connected to a modem per 100 students
  Library adult volunteer hours per 100 students

- **Factor 2: Library and School Staffing and Print Resources**

  Library staff per 100 students
  Library staff hours per 100 students
  Library hours of operation per 100 students
  Volumes per students
  Current subscriptions to magazines and newspapers per 100 students
  School dollars per student
  Student-teacher ratio

- **Factor 3: Library Technology**

  Library computers per 100 students
  Library computers with Internet connections per 100 students
  Library computers with access to catalog per 100 students
  Library computers with access to library databases
  Library computers with CD ROM drives per 100 students
  Library computers with networked access to CD ROM resources per 100 students
  Library computers connected to a modem per 100 students

- **Factor 4: Student Ethnic and Economic Composition**

  Percent of LEP students
  Percent of economically disadvantaged students
  Percent of white students
  Percent of Hispanic students

- **Factor 5: Leadership**

  Meeting with building and district library staff
  Meeting with out of district library staff
  Meeting with principal
  Attending faculty meetings

- **Factor 6: Teacher Characteristics**

  Average teacher experience
  Teacher turnover ratio
  Percent teachers with advanced degrees

- **Factor 7: Planning with and Training Teachers**

  Planning instructional units with teachers
  Providing staff development to teachers

- **Factor 8: Assisting and Instructing**

  Identifying materials for instructional units developed by teachers
  Providing information skills instruction to individuals or groups

- **Factor 9: African American students**

Percent of African American students

- **Factor 10: Collaboration**

  Teaching cooperatively with teachers

- **Factor 11: Instruction Dollars**

  Percent of school dollars devoted to instruction

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App. A

7. The Contribution of Library Resources and Activities to TAAS Performance

The last step in the analysis addressed the contribution that library resources and activities make to TAAS performance. The contribution of library resources and activities to TAAS performance was determined through a multiple regression analysis using TAAS performance as the dependent variable and the library and school/community factors as the independent variables. The factors were used in order to avoid multicollinearity. Multicollinearity is a situation in which some or all the independent variables are highly intercorrelated. When variables are highly intercorrelated the results obtained through multiple regression are not reliable and therefore can be misinterpreted. The multiple regression analysis used the forward methodology. Under this methodology the independent variables are entered into the analysis only if they meet certain statistical criteria. The order of inclusion is determined by the respective contribution of each variable to explained variance.

7.1 Elementary Schools

The 14 factors associated with elementary school library and school characteristics were entered into a multiple regression analysis as independent variables. TAAS performance was the dependent variable. Five factors explained 31 percent of the variance associated with elementary school TAAS performance. The five factors included:

- **Factor 4: Student Ethnic and Economic Composition**

  Percent of LEP students
  Percent of economically disadvantaged students
  Percent of white students
  Percent of Hispanic students

- **Factor 9: Percent African American Students**

  Percent of African American Students

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- **Factor 10: Library Technology Resources**

  Library computers connected to a modem per 100 students
  Library software packages per 100 students

- **Factor 11: Asian American Students**

  Percent of Asian American students

- **Factor 8: Library Financial Resources**

  Number of volumes purchased in 1999-00 per 100 students
  Library operational expenditures per 100 students

Factor 4—Student Ethnic and Economic Composition--accounted for 21.4 percent of the variance on TAAS performance at the elementary school level. Factor 9—African American Students—accounted for 3.7 percent of the variance. Factor 10—Library Technology Resources—accounted for 2.5 percent of the variance. Factor 11—Asian American Students—accounted for 1.8 percent of the variance. Factor 8—Library Financial Resources—accounted for 1.5 percent of the variance. Of the 31 percent of the variance in TAAS performance explained, student demographic and economic characteristics accounted for 26.9 percent of the variance and library variables accounted for four percent.

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Table IV.25 – Multiple Regression Analysis: Elementary School Libraries

Factors	R	R Square	Change Statistics				
			R Square Change	F Change	Df1	Df2	Sig F Change
Factor 4	.463	.214	.214	49.842	1	183	.000
Factor 9	.501	.251	.037	8.922	1	182	.003
Factor 10	.525	.276	.025	6.204	1	181	.014
Factor 11	.542	.294	.018	4.590	1	180	.034

Factor 8	.556	.309	.015	3.895	1	179	.050

Table IV.25.1 – Multiple Regression Analysis: Elementary School Libraries

Factors	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
Constant	86.879	.727		119.583	.000		
Factor 4	-5.116	.725	-.463	-7.060	.000	1.000	1.000
Constant	86.816	.712		122.003	.000		
Factor 4	-5.146	.710	-.465	-7.252	.000	1.000	1.000
Factor 9	2.176	.729	.192	2.987	.000	1.000	1.000
Constant	86.963	.704		123.510	.000		
Factor 4	-5.237	.701	-.474	-7.474	.000	.997	1.003
Factor 9	2.237	.719	.197	3.112	.002	.999	1.001
Factor 10	2.234	.897	.158	2.491	.014	.996	1.004
Constant	86.923	.697		124.627	.000		
Factor 4	-5.177	.694	-.468	-7.455	.000	.995	1.005
Factor 9	2.160	.713	.190	3.032	.003	.996	1.004
Factor 10	2.242	.888	.158	2.524	.012	.996	1.004
Factor 11	1.487	.694	.134	2.142	.034	.996	1.004
Constant	86.909	.692		125.597	.000		
Factor 4	-5.151	.689	-.466	-7.477	.000	.995	1.005
Factor 9	2.074	.708	.183	2.928	.004	.992	1.008
Factor 10	2.210	.881	.156	2.507	.013	.996	1.004
Factor 11	1.500	.688	.136	2.178	.031	.996	1.004
Factor 8	1.363	.690	.123	1.973	.050	.996	1.004

7.2 Middle/Junior High School

The 15 factors associated with middle/junior high school library and school characteristics were entered into a multiple regression analysis as independent variables. TAAS performance was the dependent variable. Two factors explained 48 percent of the variance associated with middle/junior high school TAAS performance. The two factors included:

- **Factor 4: Student Ethnic and Economic Composition**

  Percent of Limited English Proficiency (LEP) students
  Percent of economically disadvantaged students
  Percent of white students
  Percent of Hispanic students

- **Factor 7: Collaboration and Training**

  Identifying materials for instructional units developed by teachers
  Providing information skills instruction to individuals or groups

Factor 4—Student Ethnic and Economic Composition--accounted for 43.7 percent of the variance on TAAS performance at the middle/junior high school level. Factor 7—Collaboration and Training—accounted for 3.9 percent of the variance.

Table IV.26 – Multiple Regression Analysis: Middle/Junior High School Libraries

Factors	R	R Square	Change Statistics				
			R Square Change	F Change	Df1	Df2	Sig F Change
Factor 4	.661	.437	.437	65.288	1	84	.000
Factor 7	.690	.477	.039	6.245	1	83	.014

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Table IV.26.1 – Multiple Regression Analysis: Middle/Junior High School Libraries

Factors	Unstandardized Coefficients	Standardized Coefficients	t	Sig.	Collinearity Statistics

	B	Std. Error	Beta			Tolerance	VIF
Constant	89.407	.576		155.341	.000		
Factor 4	4.678	.579	.661	8.080	.000	1.000	1.000
Constant	89.407	.558		160.118	.000		
Factor 4	4.678	.562	.661	8.329	.000	1.000	1.000
Factor 7	1.404	.562	.198	2.499	.014	1.000	1.000

7.3 High Schools

The 11 factors associated with high school library and school characteristics were entered into a multiple regression analysis as independent variables. TAAS performance was the dependent variable. Four factors explained 64 percent of the variance associated with high school TAAS performance. The four factors included:

- **Factor 4: Student Ethnic and Economic Composition**

  Percent of LEP students
  Percent of economically disadvantaged students
  Percent of white students
  Percent of Hispanic students

- **Factor 2: Library and School Staffing and Print Resources**

  Library staff per 100 students
  Library staff hours per 100 students
  Library hours of operation per 100 students
  Volumes per students
  Current subscriptions to magazines and newspapers per 100 students
  School dollars per student
  Student-teacher ratio

- **Factor 7: Planning with and Training Teachers**

  Planning instructional units with teachers
  Providing staff development to teachers

- **Factor 9: African American students**

  Percent of African American students

Factor 4—Student Ethnic and Economic Composition--accounted for 53 percent of the variance on TAAS performance at the high school level. Factor 2--Library and School Staffing and Print Resources—accounted for 4.8 percent of the variance. Factor 7—Planning with and Training Teachers—accounted for 3.4 percent of the variance. Factor 9—Percent of African American Students—accounted for 2.4 percent of TAAS performance. The library factors explained 8.2 percent of the variance.

Table IV.27 – Multiple Regression Analysis: High School Libraries

Factors	R	R Square	Change Statistics				
			R Square Change	F Change	Df1	Df2	Sig F Change
Factor 4	.728	.530	.530	111.834	1	99	.000
Factor 2	.760	.578	.048	11.060	1	98	.001
Factor 7	.783	.612	.034	8.570	1	97	.004
Factor 9	.798	.637	.024	6.455	1	96	.013

Table IV.27.1 – Multiple Regression Analysis: High School Libraries

Factors	Unstandardized Cofficients		Standard Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
Constant	89.971	.583		154.429	.000		
Factor 4	-6.192	.586	-.728	-10.575	.000	1.000	1.000
Constant	89.971	.555		162.085	.000		
Factor 4	-6.192	.558	-.728	-11.099	.000	1.000	1.000
Factor 2	1.855	.558	.218	3.326	.001	1.000	1.000
Constant	89.971	.535		168.229	.000		
Factor 4	-6.192	.537	-.728	-11.520	.000	1.000	1.000
Factor 2	1.855	.537	.218	3.452	.001	1.000	1.000
Factor 7	1.573	.537	.185	2.927	.004	1.000	1.000

Constant	89.971	.520		172.895	.000		
Factor 4	-6.192	.523	-.728	-11.840	.000	1.000	1.000
Factor 2	1.855	.523	.218	3.547	.001	1.000	1.000
Factor 7	1.573	.523	.185	3.009	.004	1.000	1.000
Factor 9	-1.329	.523	-.156	-2.541	.013	1.000	1.000

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8. Graphic Analysis: The Relationship Between TAAS Performance and Library and School Variables

Analyses based on correlation coefficients assume a linear relationship between and among variables. For example, the Pearson correlation coefficient is a measure of the tendency of two variables to have a linear relationship. However, many important relationships between variables are nonlinear. Consequently, many key features will not be detected by a correlation coefficient when the relationship is not linear.

This section examines the relationship between the library and school variables included in the factors identified through the multiple regression as important in explaining the variance in TAAS performance. The relationship between TAAS performance, used as the dependent variable and each of the library and school variables is shown graphically.

8.1 Elementary Schools

Ten library and school variables were associated in the multiple regression analysis with TAAS performance of elementary school students. These include:

- Library computers connected to a modem per 100 students
- Library software packages per 100 students
- Number of volumes purchased in 1999-00 per 100 students
- Library operational expenditures per 100 students
- Percent of Limited English Proficiency (LEP) students
- Percent of economically disadvantaged students
- Percent of white students
- Percent of Hispanic students
- Percent of African American Students
- Percent of Asian American students

The relationship shown in the following graphs is largely nonlinear. At the lower levels of each of the library variables there is greater variance in TAAS performance than in the high levels. As the library variables increase in value, the variation in TAAS performance decreases considerably and clusters around higher TAAS performance (i.e.

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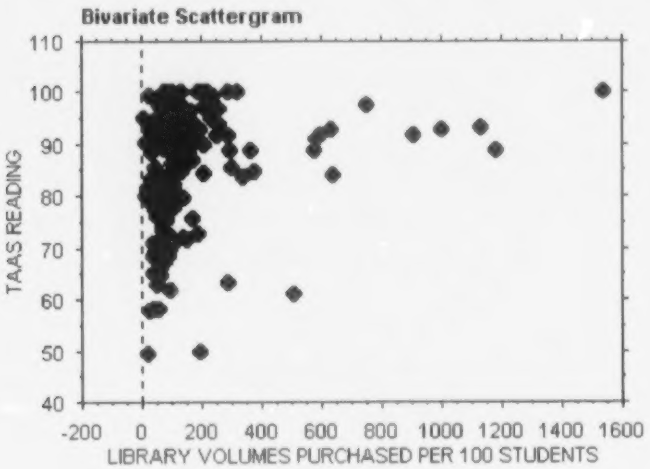
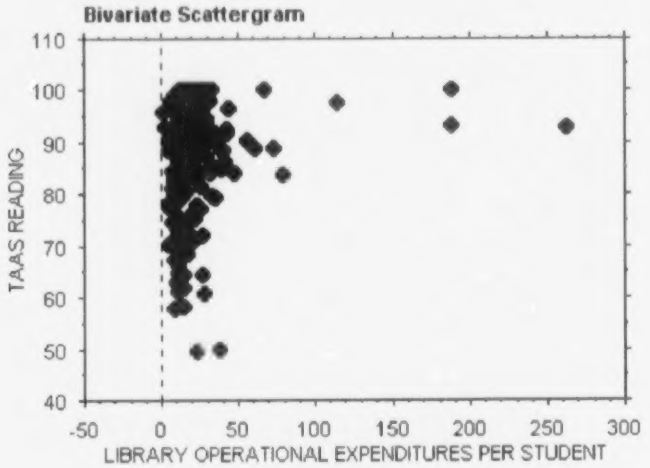
schools with a larger percent of students meeting minimum expectations on TAAS).

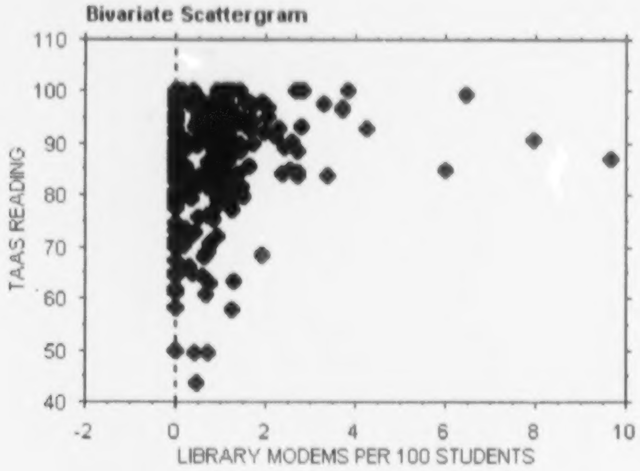
Graph IV.5 – TAAS Reading and Library Volumes Purchased Per 100 Students



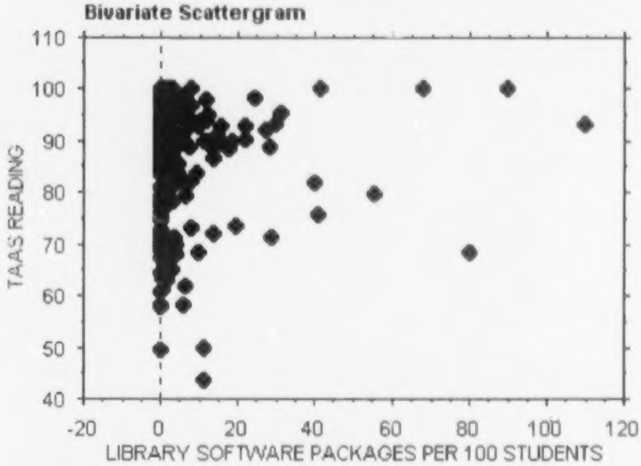
Graph IV.6 – TAAS Reading and Library Operational Expenditures Per Student



Graph IV.7 – TAAS Reading and Library Modems Per 100 Students



Graph IV.8 – TAAS Reading and Library Software Packages Per 100 Students



In some of the following graphs that associate TAAS performance with student characteristics such as percentages of students with limited English proficiency (LEP), economically disadvantaged students, white students, Hispanic students, African American students, and Asian American students, a definite linear relationship is seen. The linear relationship is particularly clear between TAAS performance and the percent of economically disadvantaged students and white students. The percent of students meeting minimum expectations on TAAS tends to decrease as the percent of economically disadvantaged students increases. The variance in TAAS performance also shows an interesting increase. The relationship between the percent of Hispanic students and TAAS performance is more amorphous. The graphic relationship between the percent of Asian American students and TAAS performance is similar to the graphs depicting the library variables.

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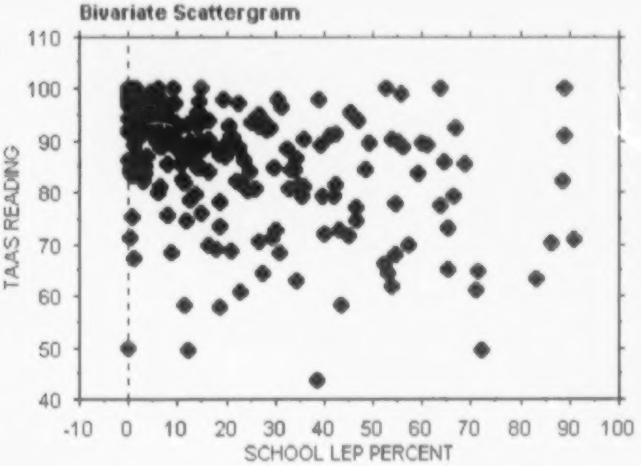
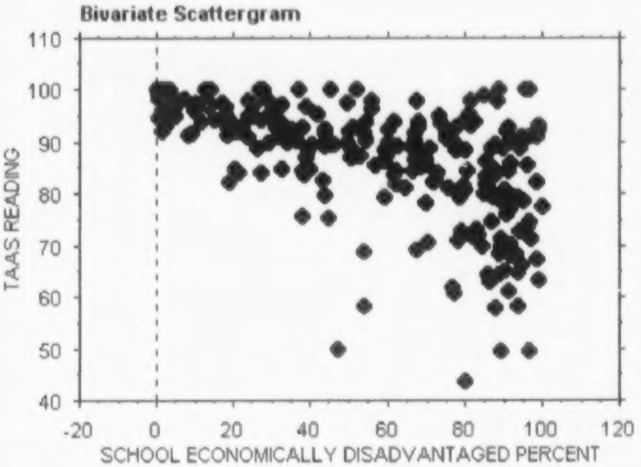
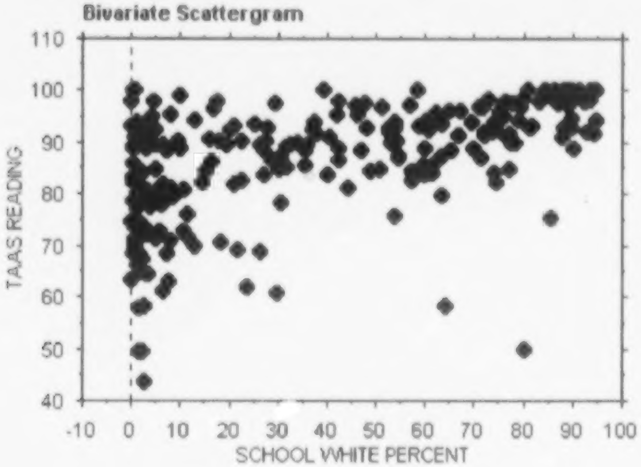
Graph IV.9 – TAAS Reading and School LEP Percent



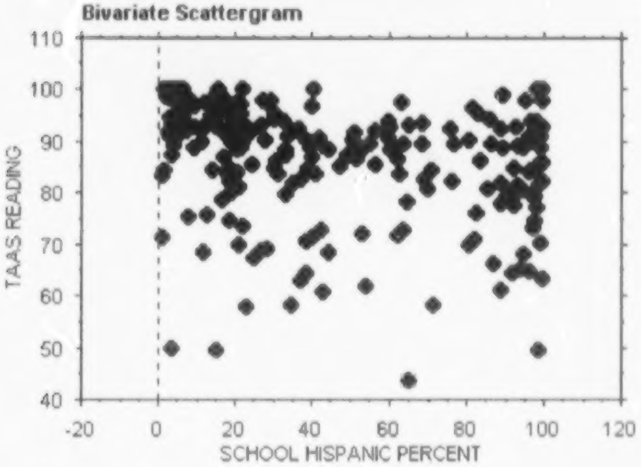
Graph IV.10 – TAAS Reading and School Economically Disadvantaged Percent



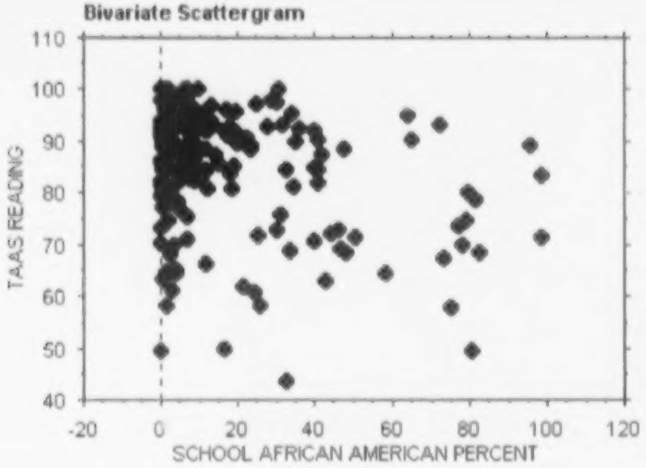
Graph IV.11 – TAAS Reading and School White Percent



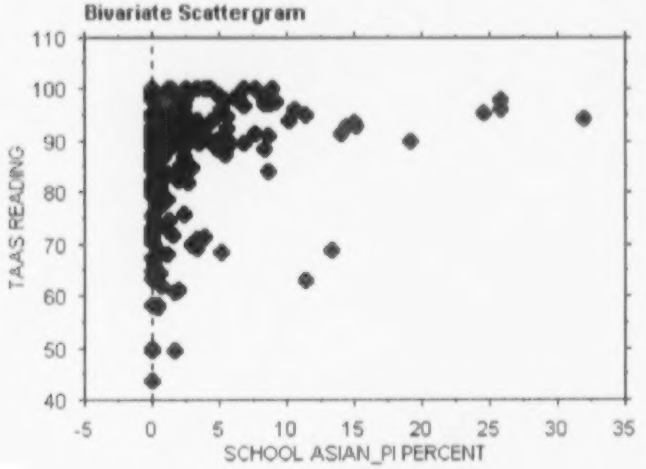
Graph IV.12 – TAAS Reading and School Hispanic Percent



.Graph IV.13 – TAAS Reading and School African American Percent



Graph IV.14 – TAAS Reading and School Asian Percent



Although causal relationships between variables are not established solely on the basis of statistical analysis, several statistically significant relationships between TAAS performance and library activities were found. For example, the factor analysis performed using library variables and TAAS performance, showed that TAAS performance seemed to have a positive relationship with the number of library adult volunteer hours per 100 students and the number of library computers connected to a modem per 100 students. A graphic exploration of these variables and TAAS performance depicted a nonlinear relationship in which increases in each variable were associated with increases in the percent of students who meet minimum expectations on TAAS as well as a reduction in the variability of that variable. The multiple regression analysis identified the number of library volumes purchased per 100 students, the number of library operational expenditures per student, the number of library computers connected to a modem per 100 students, and the number of library software packages per 100 students as contributors to an explanation of the variance in TAAS performance. The graphical analysis confirmed the relationships between these variables and TAAS performance. Consequently, elementary schools and their libraries should consider the following actions as well as assess whether these actions appear to be causes of better TAAS performance at their institution:

- Increase the library budget to the recommended level
- Increase the number of volumes purchased annually
- Increase the number of software packages for use in the school library by students
- Explore the feasibility of expanding the use of adult volunteers

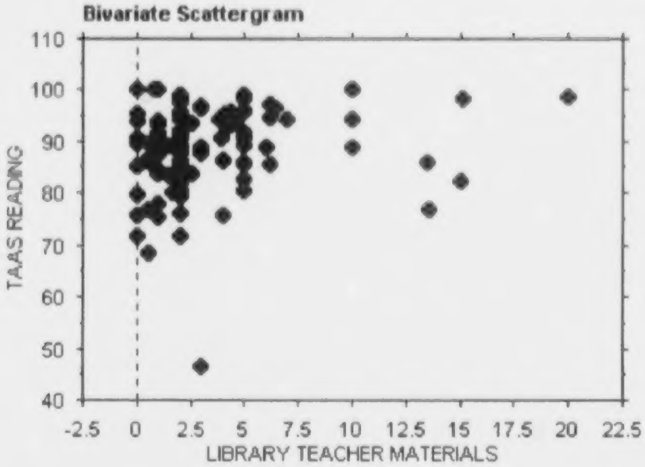
8.2 Middle/Junior High School

Six library and school variables were associated in the multiple regression analysis with TAAS performance of middle/junior high school students. These include:

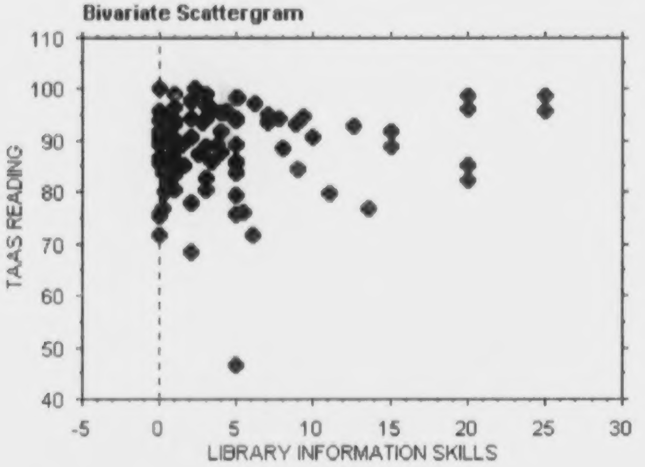
- Identifying materials for instructional units developed by teachers
- Providing information skills instruction to individuals or groups
- Percent of LEP students
- Percent of economically disadvantaged students
- Percent of white students
- Percent of Hispanic students

The graphic presentation of the two library variables and TAAS performance does not reveal the presence of a clear relationship. The linear relationships between these two library variables and TAAS performance are weak and not significantly different from zero.

Graph IV.15 – TAAS Reading and Library Teacher Materials



Graph IV.16 – TAAS Reading and Library Information Skills



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However, a significant relationship between these two library variables and TAAS performance is discerned when the relationship is reversed; that is, when TAAS performance is treated as an independent variable and each of the library variables is treated as the dependent variable, as shown in the two graphs that follow. In each case, the analysis was performed using only the 17 schools with the highest and the 17 lowest percent of students who met minimum expectations on TAAS. In both instances, a significant difference in the variance of the library variable was detected between the low and the high groups. This analysis indicates that in schools with a low percent of students meeting minimum expectations on TAAS:

- Librarians are more likely to spend little time identifying materials for instructional units developed by teachers

- Librarians are more likely to spend little time providing information skills instructions to individuals or groups

While in schools where a high percent of the students meet minimum expectation on TAAS, there is more variation in the amount of time librarians are likely to spend on these activities.

Table IV.28 – Identifying Materials for Instructional Units Planned by Teachers

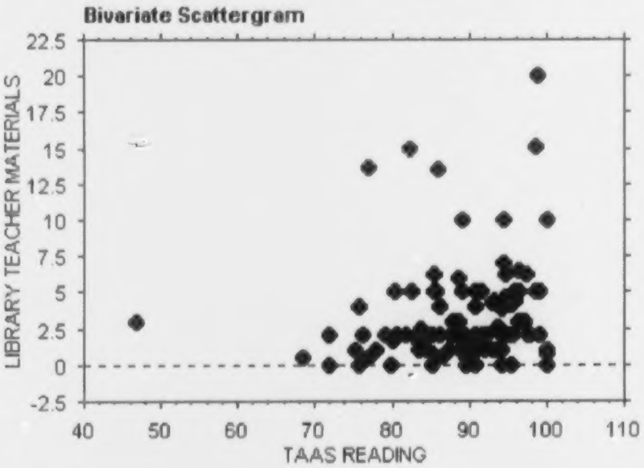
Identifying Materials for Instructional Units Planned by Teachers					
Percent of Students Meeting Minimum Expectations on TAAS	Number of Schools	Mean	Variance	Std Dev.	Standard Error
High	17	5.089	29.667	5.447	1.321
Low	17	2.368	10.304	3.210	0.779
Group	Variance Ratio	Num. DF	Den DF	F-Value	P-Value
Both	2.879	16	16	2.879	.0416

Table IV.29 – Providing Information Skills Instruction

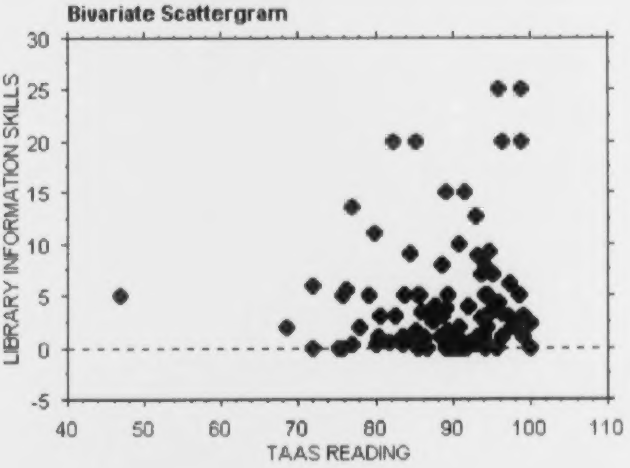
Providing Information Skills to Individuals and Groups					
Percent of Students Meeting Minimum Expectations on TAAS	Number of Schools	Mean	Variance	Std Dev.	Standard Error
High	17	4.631	49.527	7.038	1.707
Low	17	3.536	15.816	3.977	0.965

Group	Variance Ratio	Num. DF	Den DF	F-Value	P-Value
Both	3.131	16	16	3.131	.0284

Graph IV.17 – Library Teacher Materials and TAAS Reading



Graph IV.18 – Library Information Skills and TAAS Reading



The relationship between student characteristics and TAAS performance, shown in the following graphs, is stronger and more clearly linear. This relationship is especially notable with regard to the percent of students who are economically disadvantaged. Additionally, as the percent of such students increases the variance in the percent of students meeting minimum expectations on TAAS increases.

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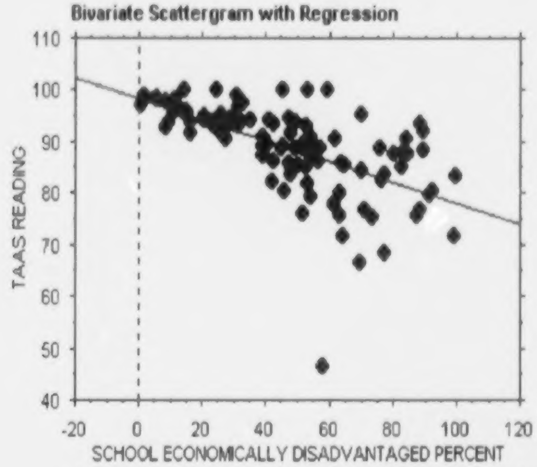
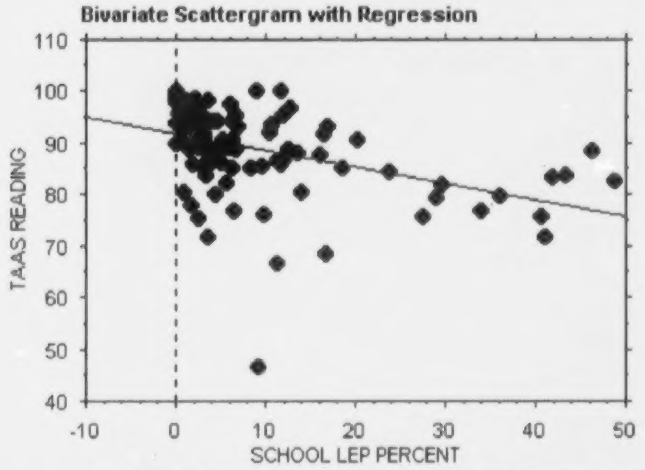
Graph IV.19 – TAAS Reading and School Economically Disadvantaged Percent



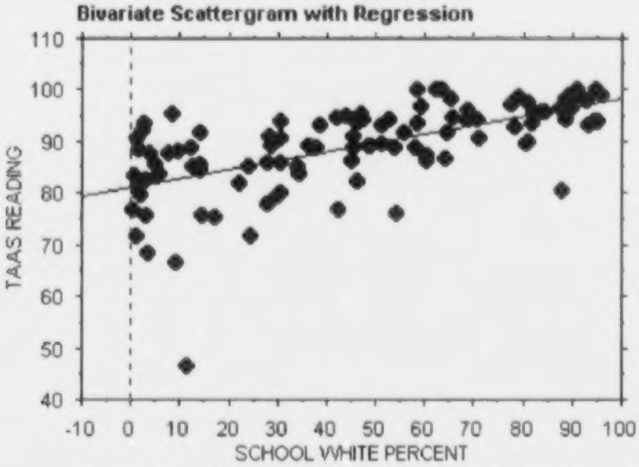
TAAS READING = 98.43 - .203 * SCHOOL ECONOMICALLY DISADVANTAGED PERCENT; R^2 = .363

Graph IV.20 – TAAS Reading and School LEP Percent



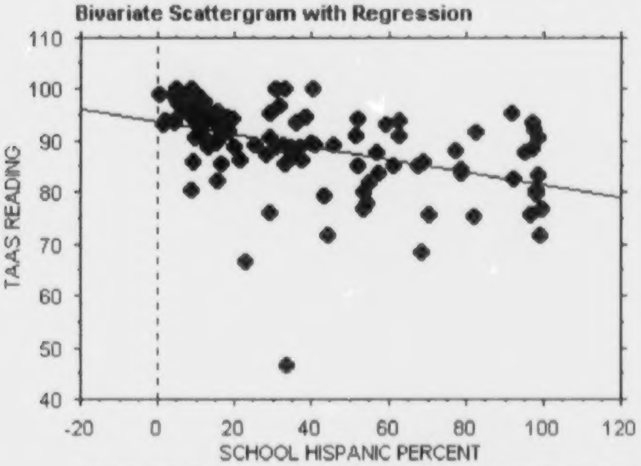
TAAS READING = 91.817 - .322 * SCHOOL LEP PERCENT; R^2 = .185

Graph IV.21 – TAAS Reading and School White Percent



TAAS READING = 81.091 + .173 * SCHOOL WHITE PERCENT; R^2 = .369

Graph IV.22 – TAAS Reading and School Hispanic Percent



TAAS READING = 93.695 - .123 * SCHOOL HISPANIC PERCENT; R^2 = .195

The graphic analysis demonstrated that at the middle/junior high school level:

- While most of the variance in TAAS performance is due to racial/ethnic variables, economic variables, and the percentage of students with limited English proficiency, the amount of variance accounted for by these variables is less than what was seen at the high school level.
- A factor that was most strongly associated with two library variables accounted for 3.9 percent of the variance in TAAS performance.
- Aside from student characteristics comprised of racial/ethnic, economic, and limited English proficiency background, library

variables appear to impact TAAS performance more than any of the other school variables.

Although the analysis by itself does not prove a causal relationship, some significant relationships between TAAS performance and library activities were found. Consequently, middle/junior high school libraries should increase to appropriate levels:

- Number of hours spent identifying materials for instructional units developed by teachers, and
- Number of hours spent providing information skills to individuals and groups.

8.3 High School

Fourteen library and school variables were associated with the variance in TAAS performance at the high school level. These variables include:

- Library staff per 100 hours
- Library staff hours per 100 students
- Library hours of operation per 100 students
- Planning instructional units with teachers
- Providing staff development to teachers
- Volumes per students
- Current subscriptions to magazines and newspapers per 100 students
- School dollars per student
- Student-teacher ratio
- Percent of LEP students
- Percent of economically disadvantaged students
- Percent of white students
- Percent of Hispanic students
- Percent of African American students

The relationship between each of these variables and TAAS performance is depicted graphically. As shown graphically:

- The relationship between these library variables and TAAS performance is nonlinear.
- The percent of students meeting minimum expectations on TAAS tends to be higher as these library variables increase in value, and
- The percent of students meeting minimum expectations on TAAS shows much less variation as the value of the library variables increase.
- This relationship pattern demonstrates that greater consistency in TAAS performance is associated with higher values in these library variables.

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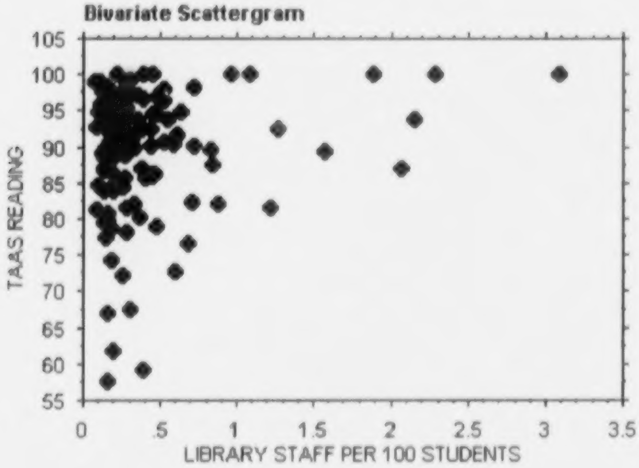
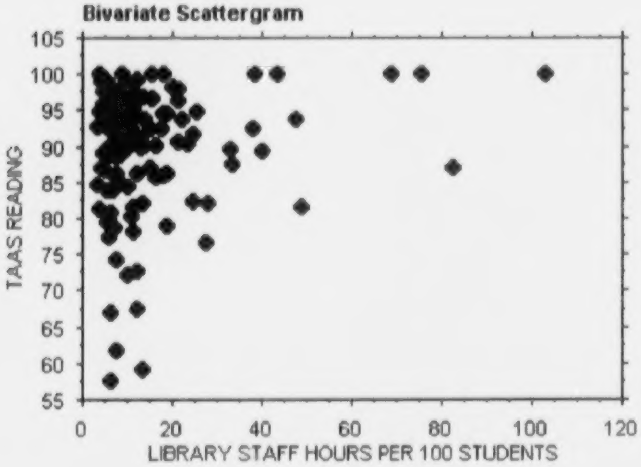
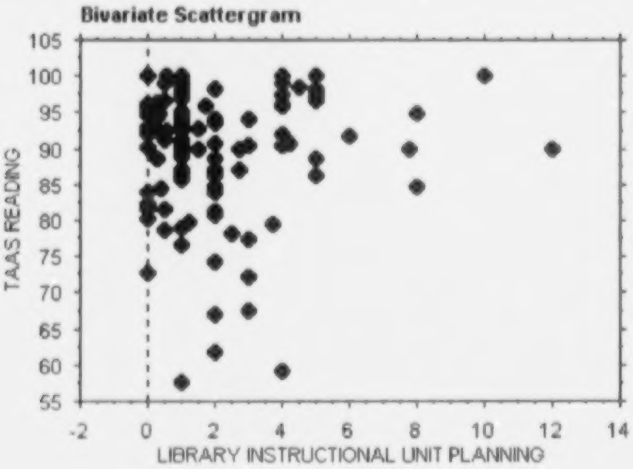
Graph IV.23 – TAAS Reading and Library Staff Per 100 Students



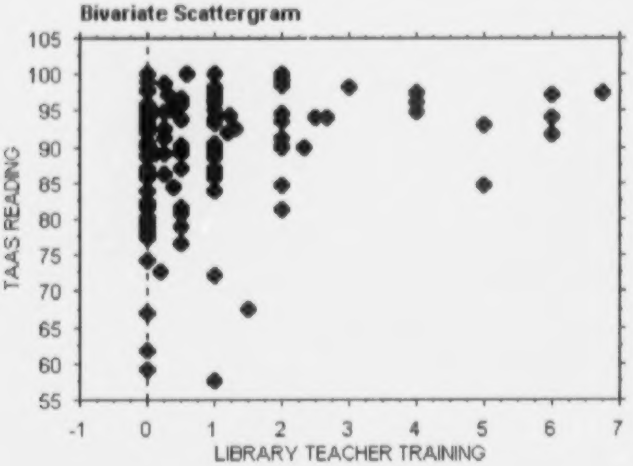
Graph IV.24 – TAAS Reading and Library Staff Hours Per 100 Students



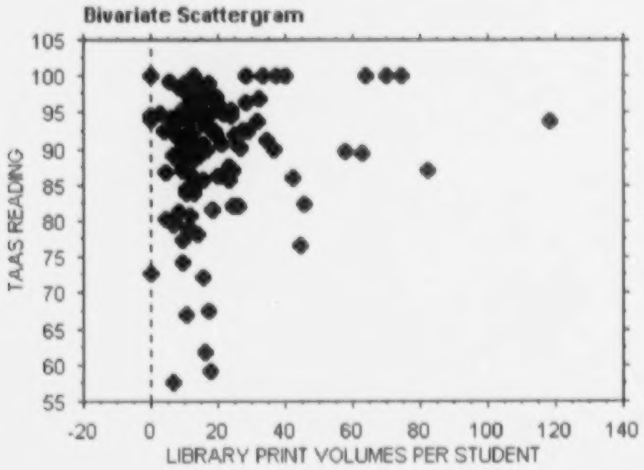
Graph IV.25 – TAAS Reading and Library Instructional Unit Planning



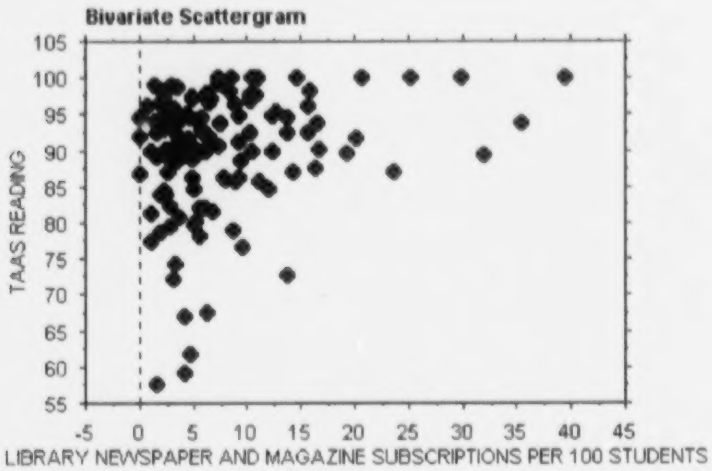
Graph IV.26 – TAAS Reading and Library Teacher Training



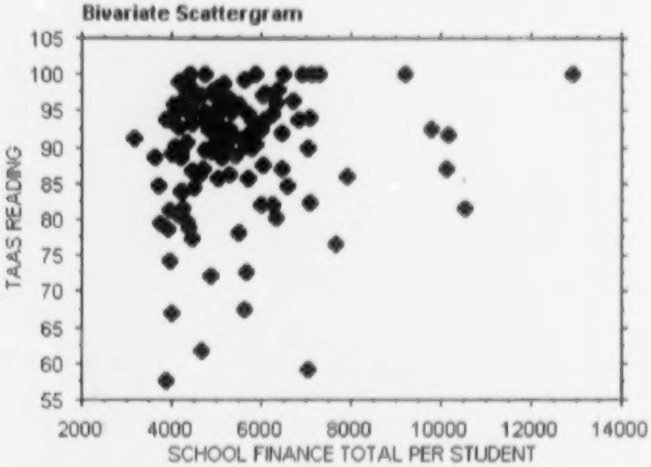
Graph IV.27 – TAAS Reading and Library Print Volumes Per Student



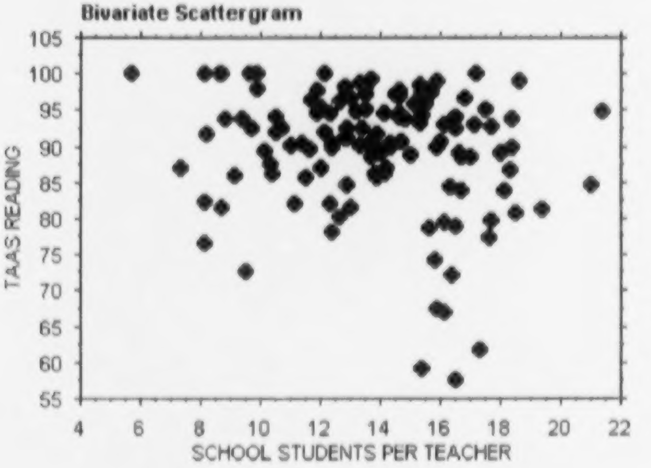
Graph IV.28 – TAAS Reading and Library Newspaper and Magazine Subscriptions Per 100 Students



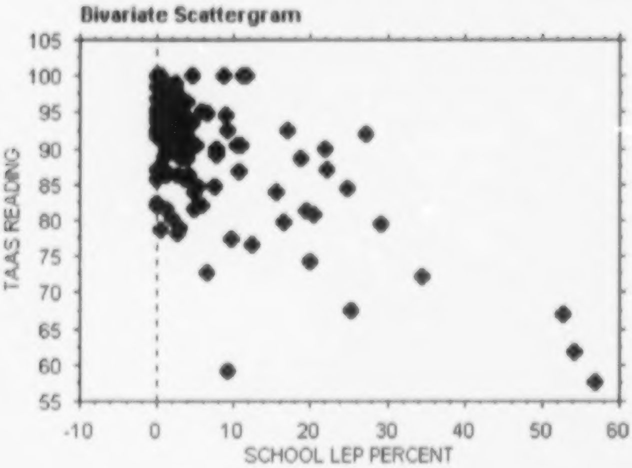
Graph IV.29 – TAAS Reading and School Finance Total Per Student



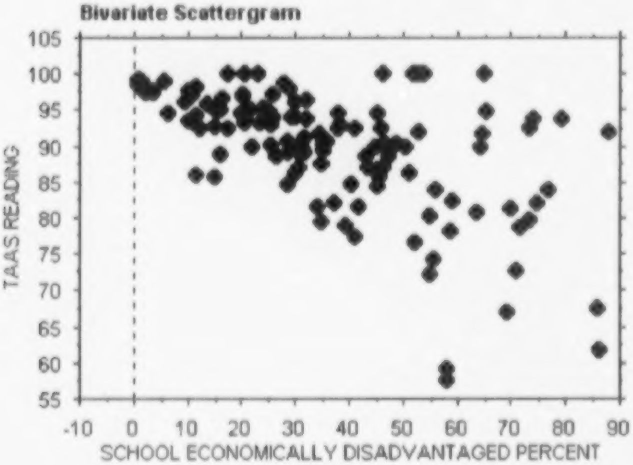
Graph IV.30 – TAAS Reading and School Students Per Teacher



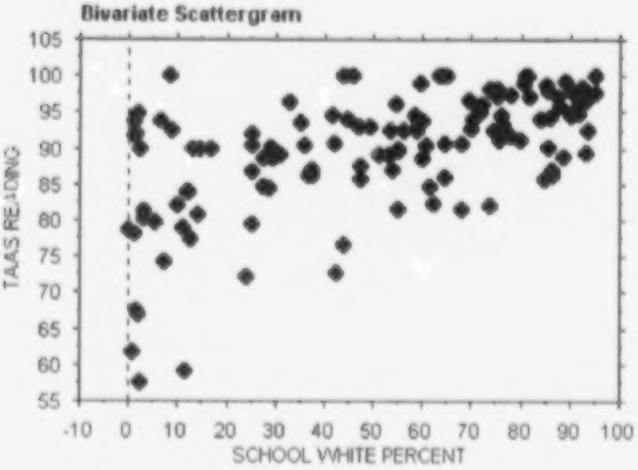
Graph IV.31 – TAAS Reading and School LEP Percent



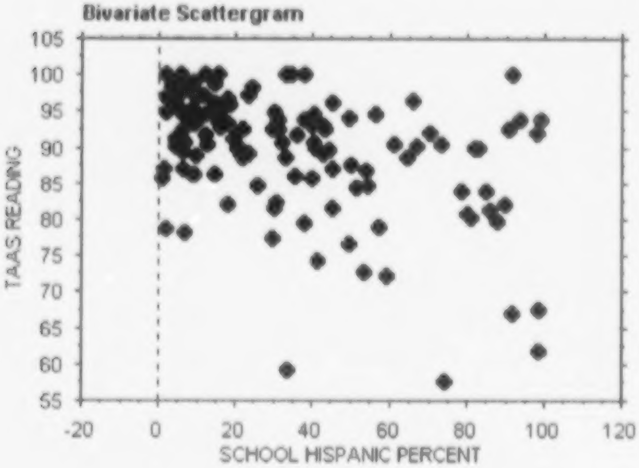
Graph IV.32 – TAAS Reading and School Economically Disadvantaged Percent



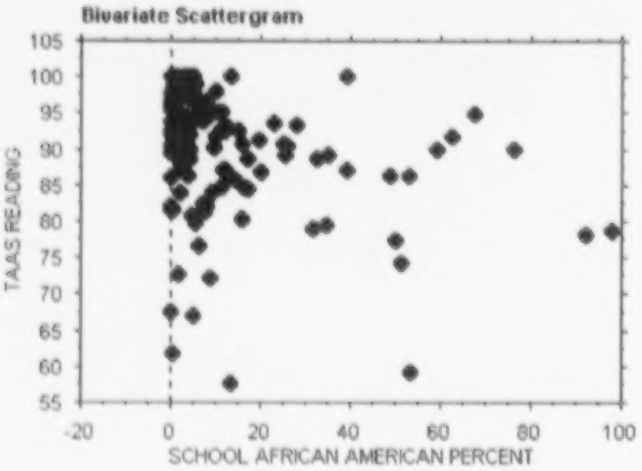
Graph IV.33 – TAAS Reading and School White Percent



Graph IV.34 – TAAS Reading and School Hispanic Percent



Graph IV.35 – TAAS Reading and School African American Percent



Even though statistical analysis can only imply but not prove causality, the relationship between library variables and TAAS performance at the high school level strongly suggests that high school libraries should increase to appropriate levels:

- The number of library staff
- The number of library staff hours
- The number of hours of library operations
- The number of hours librarians spend planning instructional units with teachers
- The number of hours librarians spend providing staff development to teachers
- The size of the library's print volume collection
- The number of current subscriptions to newspapers and magazines

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App. A

9. Library Programs in Schools with High and Low TAAS Performance

Twenty-five libraries in schools with the highest percent of students who met minimum expectations on TAAS were compared with 25 libraries in schools with the lowest percent of students who met minimum expectations on TAAS at each educational level. At all levels, libraries in schools with the highest TAAS performance have more developed library programs and more resources.

9.1 Elementary School Libraries

In the 25 elementary schools with the highest 4th grade TAAS performance, 99.6 percent of the students met minimum expectations on TAAS reading compared with 64.5 percent in the schools with the lowest TAAS performance.

The libraries in the 25 top elementary schools have more developed library programs than the libraries in the bottom 25 schools. The libraries in the top schools have:

- 20 percent more library staff per 100 students
- 25 percent longer operating hours per 100 students
- 24 percent more print volumes per student
- 29 percent more current subscriptions to magazines and newspapers per 100 students
- more than twice as many library dollars per student

Table IV.30: Elementary School Libraries: Program Development

Elementary School Library Predictors	25 Highest Scoring Schools		25 Lowest Scoring Schools	
	Mean	Median	Mean	Median

Percent of students meeting minimum expectations on TAAS	99.64	100.00	64.53	65.70
Program Development:				
Library staff per 100 students	.482	.306	.403	.322
Library staff hours per 100 students	11.94	10.51	13.92	9.91
Library hours of operation per 100 students	12.21	7.46	9.75	6.84
Print volumes per student	20.35	20.02	16.47	14.45
Current subscriptions to newspapers and magazines per 100 students	5.18	4.04	4.01	2.40
Library operating expenditures per student	$36.02	$19.76	$16.52	$13.32

Among the leadership and collaboration-teaching activities performed by librarians, the two groups of libraries differed with regard to the following:

Elementary school library staff in the top schools spend over one-third more time:

- Teaching cooperatively with teachers
- Assisting teachers to access and use information on state programs

These library staff also spend three to nine percent more time:

- Participating in curriculum committees
- Meeting with colleagues in the district

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Table IV.31: Elementary School Libraries: Leadership and Collaboration

Elementary School Library Predictors	25 Highest Scoring Schools		25 Lowest Scoring Schools	
	Mean	Median	Mean	Median
Leadership Activities (Hours per week):				
Participate in curriculum committees	1.00	1.00	.97	.85
Meet with district library staff	.86	.86	.79	.66
Meet with principal	.63	.49	1.04	.85
Attend faculty meetings	.84	.91	1.03	1.00
Collaboration-Teaching Activities (Hours per week)				
Planning instructional units with teachers	1.29	1.00	1.25	1.00
Teaching cooperatively with teachers	2.40	1.29	1.76	1.00
Providing staff development to teachers and staff	.56	.43	.59	.50
Assisting teachers to access and use information on state programs	.71	.00	.52	.00

Elementary school libraries in top schools have 30 to 50 percent more computers in the library. However, libraries in the low performance schools have more computers with Internet connections and computers with access to library databases; a testimony to the infusion of technology into schools with a high percent of economically disadvantaged student population.

Table IV.32: Elementary School Libraries: Library Technology

Elementary School Library Predictors	25 Highest Scoring Schools		25 Lowest Scoring Schools	
	Mean	Median	Mean	Median
Library Technology:				
Number of computers in library per 100 students	3.91	1.47	2.88	.87
Number of computers with Internet connection per 100 students	1.24	1.07	2.52	.78
Number of computers with access to library catalog per 100 students	2.95	1.01	1.40	.75
Number of computers with access to library databases per 100 students	.95	.90	1.55	.65
Number of computers with CD ROM drives per 100 students	3.47	1.10	2.59	.78

Number of computers with networked access to CD ROM resources per 100 students	1.63	.72	1.08	.08

The top performing elementary schools have a significantly larger base (40 percent or more) of computers in their schools that can access networked library resources than do the low performing schools.

Table IV.33: Elementary School Libraries: School Technology

Elementary School Library Predictors	25 Highest Scoring Schools		25 Lowest Scoring Schools	
	Mean	Median	Mean	Median
School Technology with Access to Networked Library Resources:				
Number of computers per 100 students	16.77	15.39	10.26	6.44
Number of computers with Internet connection per 100 students	12.12	6.54	8.83	4.84
Number of computers with access to library catalog per 100 students	9.08	.00	4.22	.00
Number of computers with access to library databases per 100 students	9.12	.00	5.95	.00

Number of computers with CD ROM drives per 100 students	12.84	7.59	8.44	3.38
Number of computers with networked access to CD ROM resources per 100 students	11.10	1.77	4.23	.00
Number of computers connected to a modem per 100 students	6.24	.00	3.12	.00

There are highly significant demographic and socio-economic differences between the top performing and the bottom performing elementary schools. The lowest performing schools have:

- Three-times as many economically disadvantaged students
- Twice as many Hispanic students
- Nearly three times as many minority students
- Nearly three tines as many families in poverty in their communities
- More than three times as many students with limited English proficiency
- One-half the median family income

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Table IV.34: Elementary School Libraries: School/Community Characteristics

Elementary School Library Predictors	25 Highest Scoring Schools		25 Lowest Scoring Schools	
	Mean	Median	Mean	Median
School/Community:				

Percent of students economically disadvantaged	29.07	7.50	84.59	89.00
Percent of white students	65.64	79.90	11.72	2.80
Percent of Hispanic students	25.48	8.25	56.47	54.10
Percent of students with limited English proficiency	11.83	2.45	38.40	34.30
Percent minority staff	18.75	5.20	56.84	55.60
Percent minority population	25.29	12.56	67.18	76.48
Percent of community in poverty	10.73	2.79	29.00	27.29
Median family income	$74422	$78456	$37894	$34622

9.2 Middle/Junior High School Libraries

In the 25 middle/junior high schools with the highest 8th grade TAAS performance, 97.6 percent of the students met minimum expectations on TAAS reading compared with 77.1 percent of the students in the schools with the lowest TAAS performance.

The libraries in the 25 top middle/junior high schools have more developed library programs than the libraries in the bottom 25 schools. The libraries in the top schools have:

- 20 percent more library staff per 100 students
- 20 percent more library staff hours per 100 students
- 20 percent longer operating hours per 100 students
- 29 percent more print volumes per student
- 34 percent more video materials per 100 students
- 38 percent more library dollars per student

Table IV.35: Middle/Junior High School Libraries: Program Development

Middle/Junior High School Library Predictors	25 Highest Scoring Schools		25 Lowest Scoring Schools	
	Mean	Median	Mean	Median
Percent of students meeting minimum expectations on TAAS	97.58	97.60	77.09	79.20
Program Development:				
Library staff per 100 students	.325	.237	.266	.224
Library staff hours per 100 students	11.61	9.01	9.48	8.97
Library hours of operation per 100 students	8.46	6.56	6.97	5.32
Print volumes per student	17.03	14.54	12.77	14.28
Video materials per 100 students	74.40	39.90	52.64	46.94
Library operating expenditures per student	$30.30	$26.41	$20.60	$14.56

Library staff in middle/junior high top schools spend more time on leadership and collaboration-teaching activities than library staff in the lowest performing schools. Library staff in top performing school spend:

- 17 percent more time attending faculty meetings
- 31 percent more time meeting with the principal and school administrators
- 33 percent more time meeting with colleagues in the district
- 16 percent more time providing training to staff
- 21 percent more time assisting teachers to access and use information on state programs
- 27 percent more time planning instructional units with teachers

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Table IV.36: Middle/Junior High School Libraries: Leadership and Collaboration

Middle/Junior High School Library Predictors	25 Highest Scoring Schools		25 Lowest Scoring Schools	
	Mean	Median	Mean	Median
Leadership Activities (Hours per week):				
Meet with district library staff	0.95	1.00	0.68	0.50
Meet with library staff outside district	0.34	0.00	0.33	0.00
Meet with principal	0.80	0.50	0.58	0.25
Attend faculty meetings	0.86	0.74	1.02	1.00
Collaboration-Teaching Activities (Hours per week):				
Planning instructional units with teachers	2.31	2.00	1.76	1.00
Teaching cooperatively with teachers	4.34	2.50	4.48	2.50
Providing staff development to teachers and staff	0.93	0.87	0.79	0.00
Assisting teachers to access and use information on state programs	0.94	0.72	1.16	0.00

Libraries in top performing middle/junior high schools have 20 to 77 percent more technology resources in their libraries.

Table IV.37: Middle/Junior High School Libraries: Library Technology

Middle/Junior High School Library Predictors	25 Highest Scoring Schools		25 Lowest Scoring Schools	
	Mean	Median	Mean	Median
Library Technology:				
Number of computers in library per 100 students	2.32	1.76	1.80	1.40
Number of computers with Internet connection per 100 students	1.95	1.51	1.57	1.24
Number of computers with access to library catalog per 100 students	1.63	0.98	1.07	0.90
Number of computers with access to library databases per 100 students	1.56	1.06	0.98	0.91
Number of computers with CD ROM drives per 100 students	2.14	1.61	1.42	0.98
Number of computers with networked access to CD ROM resources per 100 students	1.17	0.59	0.52	0.00

- Libraries in top middle/junior high schools have five to 12 percent more computers in their schools with access to networked library resources.

Table IV.38: Middle/Junior High School Libraries: School Technology

Middle/Junior High School Library Predictors	25 Highest Scoring Schools		25 Lowest Scoring Schools	
	Mean	Median	Mean	Median
School Technology with Access to Networked Library Resources:				
Number of computers per 100 students	10.56	6.76	9.55	0.25
Number of computers with Internet connection per 100 students	8.84	4.84	8.89	0.00
Number of computers with access to library catalog per 100 students	6.54	0.00	7.44	0.00
Number of computers with access to library databases per 100 students	7.91	0.42	7.90	0.00
Number of computers with CD ROM drives per 100 students	8.78	6.76	8.35	0.00
Number of computers with networked access to CD ROM resources per 100 students	6.00	0.00	5.61	0.00

The top and bottom performing middle/junior high schools differ significantly in the composition of their student population and community. The bottom performing schools have:

- Nearly three times as many economically disadvantaged students
- Nearly four times as many Hispanic students
- Four times as great a minority population in the community
- Four time as many people in poverty in the community
- Five times as many students with limited English proficiency
- About one-half of the median family income

Table IV.39: Middle/Junior High School Libraries: School/Community Characteristics

Middle/Junior High School Library Predictors	25 Highest Scoring Schools		25 Lowest Scoring Schools	
	Mean	Median	Mean	Median
School/Community:				
Percent of students economically disadvantaged	21.81	14.50	68.30	66.80
Percent of white students	73.92	81.00	20.88	15.75
Percent Hispanic students	16.57	8.90	63.84	64.50
Percent of students with limited English proficiency	3.19	2.00	19.58	15.25
Percent minority staff	8.63	5.00	40.70	37.75
Percent minority population	15.86	9.40	60.36	69.38
Percent of community in poverty	6.86	5.31	28.40	24.63
Median family income	$67026	$62750	$36903	$33468

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9.3 High School Libraries

In the 25 high schools with the highest 10th grade TAAS performance, 98.7 percent of the students met minimum expectations on TAAS reading compared with 76.0 percent in the schools with the lowest TAAS performance.

The libraries in the 25 top high schools have more developed library programs than the libraries in the bottom 25 schools. The libraries in the top schools have:

- 55 percent more library staff per 100 students
- 51 percent more library staff hours per 100 students
- 40 percent longer operating hours per 100 students
- 46 percent more print volumes per student
- 58 percent more computer software per 100 students
- 82 percent more library dollars per student

Table IV.40: High School Libraries: Program Development

High School Library Predictors	25 Highest Scoring Schools		25 Lowest Scoring Schools	
	Mean	Median	Mean	Median
Percent of students meeting minimum expectations on TAAS	98.72	98.70	76.05	78.90
Program Development:				
Library staff per 100 students	.606	.302	.346	.254
Library staff hours per 100 students	21.26	11.16	12.63	10.16
Library hours of operation per 100 students	12.70	7.02	8.52	4.72
Print volumes per student	23.99	16.35	15.00	11.89
Computer software packages for in-library use per 100 students	0.63	0.00	1.16	0.22

Library operating expenditures per student	$57.47	$29.95	$23.92	$14.56

Library staff in top high schools spend more time on leadership and collaboration-teaching activities than library staff in the bottom schools. They are particularly active in:

- Providing training to staff
- Planning instructional units with teachers

However, library staff in the bottom performing schools spend more time:

- Teaching cooperatively with teachers
- Meeting with district library staff
- Attending faculty meetings

Table IV.41: High School Libraries: Leadership and Collaboration

High School Library Predictors	25 Highest Scoring Schools		25 Lowest Scoring Schools	
	Mean	Median	Mean	Median
Leadership Activities (Hours per week):				
Meet with district library staff	0.67	0.70	1.59	0.50
Meet with library staff outside district	0.36	0.00	0.07	0.00
Meet with principal	0.99	1.00	0.62	0.50
Attend faculty meetings	0.72	0.50	0.97	0.85
Collaboration-Teaching Activities (Hours per week):				
Planning instructional units with teachers	2.18	1.00	1.46	1.20

Teaching cooperatively with teachers	4.18	3.00	6.54	2.00
Providing staff development to teachers and staff	1.31	1.00	0.35	0.00
Identifying materials for instructional units developed by teachers	5.02	3.00	4.12	3.00
Providing information skills instruction to individuals or groups	6.44	4.00	6.01	3.80

Libraries in top high schools have 11 to 42 percent more technology resources in the library.

Table IV.42: High School Libraries: Library Technology

High School Library Predictors	25 Highest Scoring Schools		25 Lowest Scoring Schools	
	Mean	Median	Mean	Median
Library Technology:				
Number of computers in library per 100 students	3.14	2.54	2.69	1.92
Number of computers with Internet connection per 100 students	2.67	1.88	1.74	1.28
Number of computers with access to library catalog per 100 students	2.16	1.23	1.88	1.06

Number of computers with access to library databases per 100 students	2.19	1.50	1.79	0.95
Number of computers with CD ROM drives per 100 students	2.77	2.09	2.47	1.36
Number of computers with networked access to CD ROM resources per 100 students	1.95	0.72	1.52	0.65
Number of computers connected to a modem per 100 students	1.64	1.70	1.67	0.77

Libraries in top performing high schools have significantly more computers in their schools that can access networked library resources.

Table IV.43: High School Libraries: School Technology

High School Library Predictors	25 Highest Scoring Schools		25 Lowest Scoring Schools	
	Mean	Median	Mean	Median
School Technology with Access to Networked Library Resources:				
Number of computers per 100 students	28.98	16.69	13.21	0.00

Number of computers with Internet connection per 100 students	23.73	12.92	12.06	0.00
Number of computers with access to library catalog per 100 students	21.03	1.23	8.23	0.00
Number of computers with access to library databases per 100 students	22.54	8.07	12.05	0.00
Number of computers with CD ROM drives per 100 students	22.08	7.17	12.30	0.00
Number of computers with networked access to CD ROM resources per 100 students	17.19	0.00	4.37	0.00
Number of computers connected to a modem per 100 students	19.94	6.48	1.24	0.00

The socio-economic differences between these two groups of high schools are significant. The bottom performing high schools have:

- Nearly three times as many economically disadvantaged students
- Two and one-half times as many Hispanic students
- More than six times as many students with limited English proficiency
- More than three times as many minorities in the community
- Four times as many people in poverty in the community
- Two-thirds the median family income

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Table IV.44: High School Libraries: School/Community Characteristics

High School Library Predictors	25 Highest Scoring Schools		25 Lowest Scoring Schools	
	Mean	Median	Mean	Median
School/Community:				
Percent of students economically disadvantaged	21.05	20.10	59.10	58.00
Percent of white students	75.14	80.90	20.10	11.50
Percent of Hispanic students	16.22	9.30	57.85	57.10
Percent of students with limited English proficiency	2.24	1.00	16.26	9.80
Percent minority staff	10.72	7.20	44.49	50.50
Percent minority population	13.76	7.03	60.18	61.71
Percent of community in poverty	6.70	6.39	26.58	23.51
Median family income	$63842	$47415	$38220	$37319

9.4 Partial Correlation Analysis

The preceding section illustrated dramatic differences in the library and technology resources of the highest and the lowest performing schools. However, simply increasing library resources will probably not erase these differences, because library and technology variables are confounded with socio-economic variables. That is, those schools with the lowest performance on TAAS also have significantly more economically disadvantaged students as well as a larger percent of minority students. However, since multiple regression indicated that library variables tend to explain from four to eight percent of the variance in TAAS performance, it is likely that maximizing library resources in such schools will make an important difference.

In much of the analysis contained in this study, socio-economic conditions were repeatedly shown to be the strongest predictor of TAAS performance with various library variables coming next in importance as a predictor. Of the socio-economic variables included in the analyses, the variables found to be most relevant to TAAS performance included:

- Percent of economically disadvantaged students
- Percent of white students
- Percent of Hispanic students

By using partial correlations, the effect of the percent of economically disadvantaged students on TAAS performance can be controlled. Partial correlations can show the relationship between the percent of white and Hispanic students and TAAS if all schools had the same percent of economically disadvantaged students. By controlling for the percent of economically disadvantaged students, a truer picture of what impact, if any, ethnic or racial variables have on TAAS performance emerges. The results for elementary, middle/junior, and high schools are presented in the tables below.

Table IV.45: Elementary School Students' Ethnicity/Race and TAAS

Correlations	Percent of White Students	Percent of Hispanic Students
Bivariate correlation	.508	-.295
Partial correlation controlling for percent of economically disadvantaged students	.026*	.225

*Not significantly different from zero, p = .686 (2-tailed, α =.05)

Table IV.46: Middle/Junior High School Students' Ethnicity/Race and TAAS

Correlations	Percent of White Students	Percent of Hispanic Students

Bivariate correlation	.607	-.442
Partial correlation controlling for percent of economically disadvantaged students	.229	.148*

*Not significantly different from zero, p = .137 (2-tailed, $\alpha = .05$)

Table IV.47: High School Students' Ethnicity/Race and TAAS

Correlations	Percent of White Students	Percent of Hispanic Students
Bivariate correlation	.581	-.445
Partial correlation controlling for percent of economically disadvantaged students	.255	-.026*

*Not significantly different from zero, p = .768 (2-tailed, $\alpha = .05$)

In all instances when economic conditions are controlled, the linear relationship between students' ethnicity/race and TAAS is either severely weakened or disappears entirely. Furthermore, the relationship between the percent of Hispanic students and TAAS performance either changes from a negative to a positive relationship or to one that is not significantly different from zero. The conclusion is that differences in TAAS performance are much more related to economic disparities than to ethnic or racial distinctions.

The contribution of economic impoverishment to poor academic performance has been demonstrated in many studies. When economic impoverishment is coupled, as seen above, with a corresponding impoverishment in school library and technology resources, students are doubly deprived of the kind of enriched environment that is needed for learning to flourish. This emphasizes all the more the importance of raising library resources to acceptable levels.

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App. A

V. STUDENT PERFORMANCE IN SCHOOLS WITHOUT LIBRARIANS

According to the Public Education Information System (PEIMS) of the Texas Education Agency, 1806 of 7,467 schools in Texas (24 percent) do not have any librarians. Of those 1806 schools,

- 1,012 are elementary schools (56 percent)
- 303 are middle/junior high schools (17 percent)
- 279 are high schools (15 percent)
- 185 are combined elementary and secondary schools (10 percent)
- 27 schools did not have educational level designations (1.5 percent)

The analyses were performed on the 1,779 schools identified as elementary, middle/junior high, high, and elementary/secondary.

1. Student Performance on TAAS

The performance of students on TAAS in schools without librarians was compared to TAAS performance in schools with librarians. At all educational levels, TAAS performance was lower in schools without librarians than in schools with librarians. Across all educational levels, over 10 percent more students in schools with librarians than in schools without librarians met minimum TAAS expectations in reading.

Table V. 1: Mean Percent of Students Who Met Minimum TAAS Expectations

Level	Schools with Librarians	Schools without Librarians
All schools	89.3%	78.4%
Elementary schools	89.3%	79.2%

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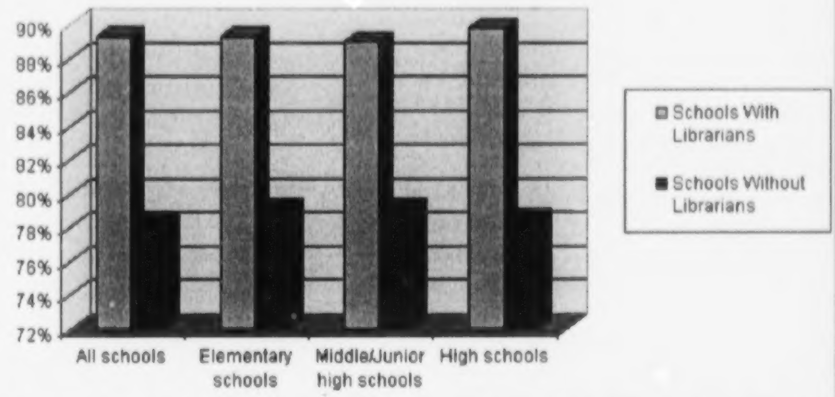
Middle/Junior high schools	89.0%	79.2%
High schools	89.8%	78.6%

* Includes elementary/secondary schools.



Graph V.1: Mean Percent of Students Who Met Minimum TAAS Expectations

Furthermore, in 52 percent of the schools with librarians compared with 21 percent of schools without librarians over 90 percent of the students met minimum TAAS expectations in reading. That is, 2.5 times more schools with librarians than schools without librarians had over 90 percent of students meeting minimum TAAS expectations.

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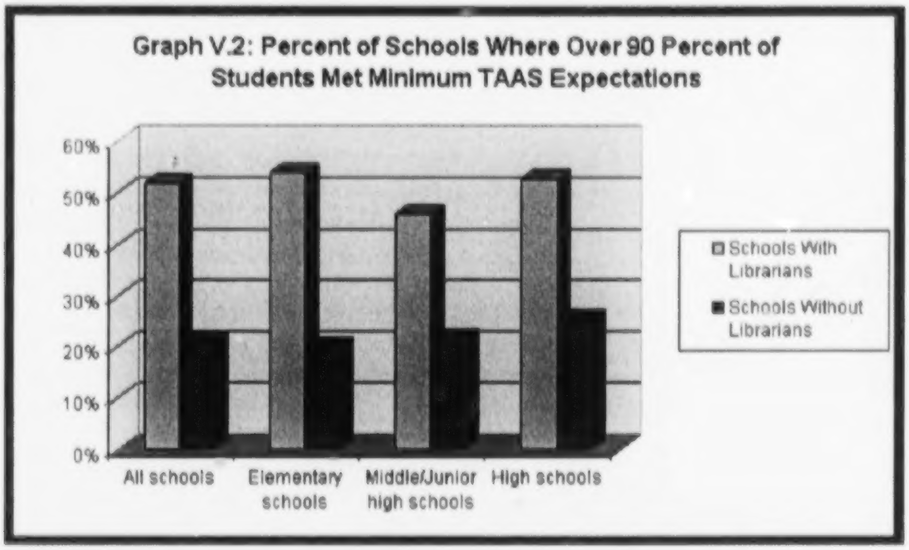
Table V. 2: Percent of Schools Where Over 90 Percent of Students Met Minimum TAAS Expectations

Level	Schools with Librarians	Schools without Librarians
All schools	52.0%	21.1%*
Elementary schools	53.9%	20.3%
Middle/Junior high schools	46.1%	21.6%
High schools	52.7%	25.5%

* Includes elementary/secondary schools.



The percent of lower performing schools (i.e. schools where 70 percent or less of students met minimum TAAS expectations) among schools without librarians was significantly higher than the percent of such schools among those with librarians.

In five percent of the schools with librarians compared with 21 percent of the schools without librarians, 70 percent or less percent of the students met minimum expectations on TAAS reading. Four times more schools without librarians than schools with librarians were low performing. One-fifth of the schools without librarians were low performing.

Table V.3: Percent of Schools Where 70 Percent or Less Students Met Minimum TAAS Expectations in Reading

Level	Schools with Librarians	Schools without Librarians
All schools	5.2%	20.6%*
Elementary schools	6.6%	19.1%
Middle/Junior high schools	2.9%	17.4%
High schools	3.8%	21.1%

* Includes elementary/secondary schools.

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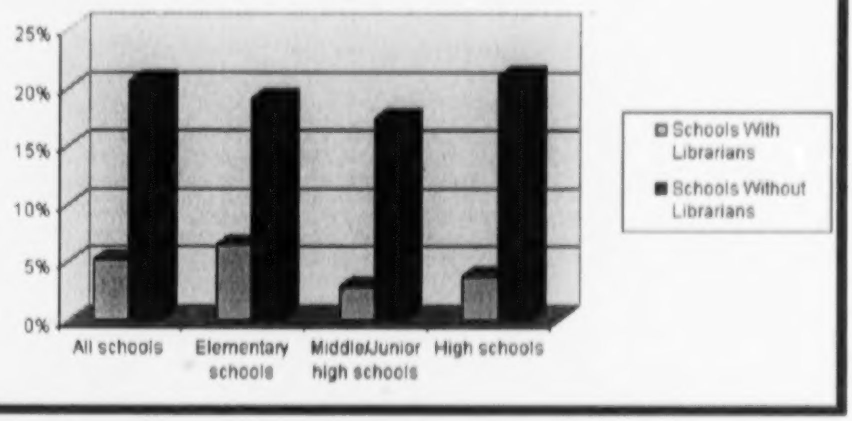
Graph V.3: Percent of Schools Where 70 Percent or Less Students Met Minimum TAAS Expectations in Reading



The following tables present detailed data on TAAS performance overall for all schools as well as by educational level. Please note that the following tables do not show a comparison between elementary/secondary schools with librarians and without librarians because the sample of schools with librarians included only 14 elementary/secondary schools; too small of a sample for a meaningful comparison.

Table V.4: Percent of Students Who Met Minimum TAAS Expectations At All Educational Levels in Schools With and Without Librarians

Percent of Students Who Met Minimum TAAS Expectations in Reading	Schools With Librarians		Schools Without Librarians	
	# (500)	%	# (1541)*	%
60 percent or less	9	1.8%	160	10.4%
61 to 65 percent	7	1.4%	68	4.4%
66 to 70 percent	10	2.0%	90	5.8%
71 to 75 percent	17	3.4%	161	10.4%
76 to 80 percent	30	6.0%	186	12.1%

81 to 85 percent	53	10.6%	268	17.4%
86 to 90 percent	114	22.8%	282	18.3%
91 to 95 percent	139	27.8%	213	13.8%
96 to 99 percent	92	18.4%	94	6.1%
100 percent	29	5.8%	19	1.2%
Mean	89.3%		78.4%	

* TAAS data were not available for 238 schools without librarians. Includes elementary/secondary schools.

On average, in schools without librarians 10 percent fewer students met minimum TAAS expectations in reading than in schools with librarians.

Table V.5: TAAS Performance in Elementary Schools With and Without Librarians

Percent of Students Who Met Minimum TAAS Expectations in Reading	Elementary Schools With Librarians		Elementary Schools Without Librarians	
	# (267)	%	# (893)*	%
60 percent or less	6	2.2%	67	7.5%
61 to 65 percent	6	2.2%	45	5.0%
66 to 70 percent	6	2.2%	59	6.6%
71 to 75 percent	9	3.4%	103	11.5%
76 to 80 percent	12	4.5%	112	12.5%
81 to 85 percent	27	10.1%	164	18.4%
86 to 90 percent	57	21.3%	161	18.0%
91 to 95 percent	72	27.0%	121	13.5%

96 to 99 percent	57	21.3%	54	6.0%
100 percent	15	5.6%	7	0.8%
Mean	89.3%		79.2%	

* TAAS data were not available for 119 elementary schools without librarians.

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Table V.6: TAAS Performance in Middle/Junior High Schools With and Without Librarians

Percent of Students Who Met Minimum TAAS Expectations in Reading	Schools With Librarians		Schools Without Librarians	
	# (104)	%	# (259)*	%
60 percent or less	1	1.0%	26	10.0%
61 to 65 percent	--	--	9	3.5%
66 to 70 percent	2	1.9%	10	3.9%
71 to 75 percent	5	4.8%	24	9.3%
76 to 80 percent	9	8.6%	34	13.1%
81 to 85 percent	13	12.5%	51	19.7%
86 to 90 percent	26	25.0%	49	18.9%
91 to 95 percent	30	28.8%	35	13.5%
96 to 99 percent	13	12.5%	14	5.4%
100 percent	5	4.8%	7	2.7%
Mean	89.0%		79.2%	

* TAAS data were not available for 44 middle/junior high schools without librarians.

Table V.7: TAAS Performance in High Schools With and Without Librarians

Percent of Students Who Met Minimum TAAS Expectations in Reading	Schools With Librarians		Schools Without Librarians	
	# (129)	%	# (247)*	%
60 percent or less	2	1.5%	32	13.0%
61 to 65 percent	1	0.8%	8	3.2%
66 to 70 percent	2	1.5%	12	4.9%
71 to 75 percent	3	2.3%	25	10.1%
76 to 80 percent	9	7.0%	24	9.7%
81 to 85 percent	13	10.1%	37	15.0%
86 to 90 percent	31	24.0%	46	18.6%
91 to 95 percent	37	28.7%	43	17.4%
96 to 99 percent	22	17.0%	16	6.5%
100 percent	9	7.0%	4	1.6%
Mean	89.8%		78.6%	

* TAAS data were not available for 32 high schools without librarians.

The TAAS performance of elementary/secondary schools without performance was lower. In elementary/secondary schools without librarians, on average, 70.9 percent of the students met minimum expectation on TAAS reading.

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2. Demographic Analysis

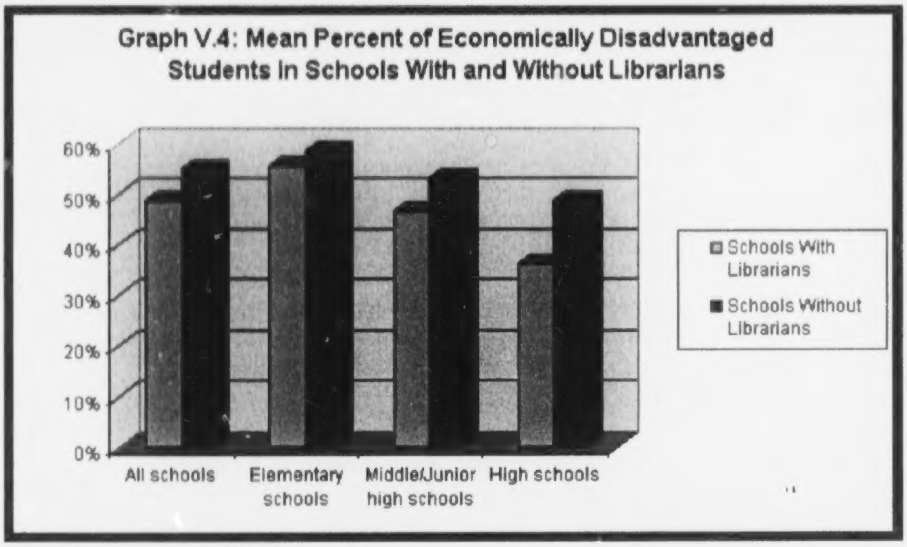
Schools without librarians have a larger percent of economically disadvantaged students than schools with librarians at all educational levels.

Table V. 8: Mean Percent of Economically Disadvantaged Students in Schools With and Without Librarians

Level	Schools With Librarians	Schools Without Librarians
All schools	48.9%	55.1%*
Elementary schools	55.7%	58.7%
Middle/Junior high schools	46.6%	53.2%
High schools	36.4%	48.7%

* Includes elementary/secondary schools.

Graph V.4: Mean Percent of Economically Disadvantaged Students in Schools With and Without Librarians

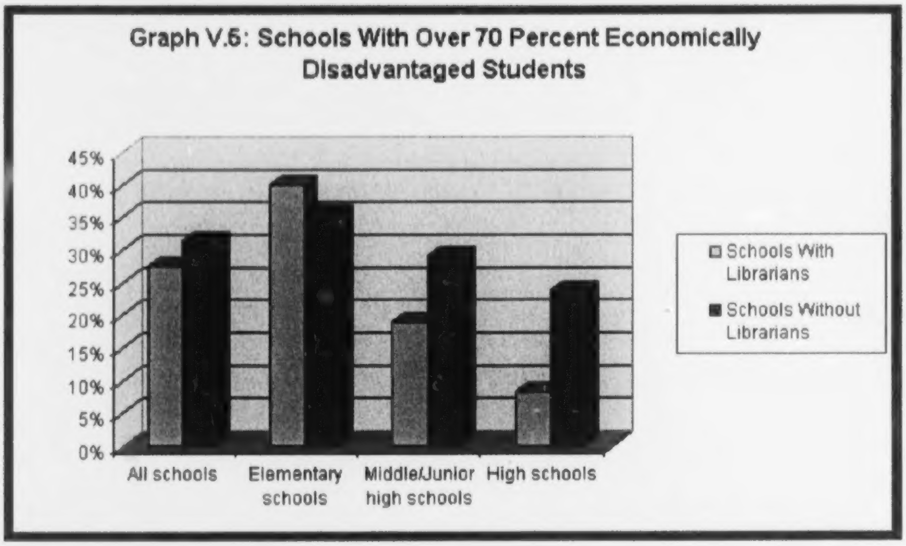


With the exception of elementary schools 10 to 15 percent more middle/junior high schools and high schools without librarians had over 70 percent of economically disadvantaged students than schools with librarians.

Table V.9: Schools With Over 70 Percent Economically Disadvantaged Students

Level	Schools With Librarians	Schools Without Librarians
All schools	27.6%	31.4%*
Elementary schools	40.1%	35.6%
Middle/Junior high schools	19.1%	29.3%
High schools	8.5%	23.9%

* Includes elementary/secondary schools.



Seven to 12 percent more schools with librarians than schools without librarians had 20 percent or fewer economically disadvantaged students.

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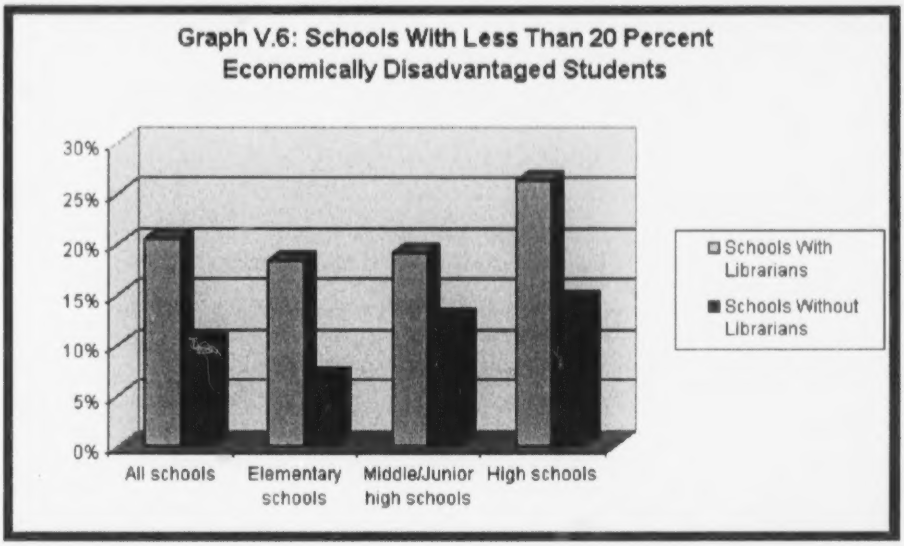
Table V.10: Schools With Less Than 20 Percent Economically Disadvantaged Students

Level	Schools With Librarians	Schools Without Librarians
All schools	20.6%	10.5%*
Elementary schools	18.4%	6.9%
Middle/Junior high schools	19.2%	12.7%
High schools	26.4%	14.5%

* Includes elementary/secondary schools.



Graph V.6: Schools With Less Than 20 Percent Economically Disadvantaged Students

The following tables present data on percent of economically disadvantaged students across and by educational level comparing schools with and without librarians.

Table V.11: Percent of Economically Disadvantaged Students At All Educational Levels in Schools With and Without Librarians

Percent of Economically Disadvantaged Students	Schools With Librarians		Schools Without Librarians	
	# (500)	%	# (1769)*	%
0-10 percent	55	11.0%	101	5.7%
11 to 20 percent	48	9.6%	85	4.8%
21 to 30 percent	51	10.2%	150	8.5%
31 to 40 percent	55	11.0%	194	11.0%
41 to 50 percent	52	10.4%	237	13.4%
51 to 60 percent	59	11.8%	242	13.7%
61 to 70 percent	42	8.4%	205	11.6%
71 to 80 percent	42	8.4%	175	9.9%
81 to 90 percent	52	10.4%	134	7.6%

91 to 100 percent	44	8.8%	246	13.9%
Mean	48.9%		55.1%	

* Data on percent of economically disadvantaged students were not available for 10 of the schools. Includes elementary secondary schools.

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Table V.12: Percent of Economically Disadvantaged Students in Elementary Schools With and Without Librarians

Percent of Economically Disadvantaged Students	**Elementary Schools With Librarians**		**Elementary Schools Without Librarians**	
	# (267)	**%**	**# (1009)***	**%**
0-10 percent	33	12.4%	30	3.0%
11 to 20 percent	16	6.0%	39	3.9%
21 to 30 percent	19	7.1%	75	7.4%
31 to 40 percent	23	8.6%	97	9.6%
41 to 50 percent	18	6.7%	141	14.0%
51 to 60 percent	26	9.7%	140	13.9%
61 to 70 percent	25	9.4%	128	12.7%
71 to 80 percent	27	10.1%	114	11.3%
81 to 90 percent	40	15.0%	92	9.1%
91 to 100 percent	40	15.0%	153	15.2%
Mean	55.7%		58.7%	

* Data on percent of economically disadvantaged students were not available for three of the elementary schools.

Table V.13: Percent of Economically Disadvantaged Students in Middle/Junior High Schools With and Without Librarians

Percent of Economically Disadvantaged Students	Middle/Junior High Schools With Librarians		Middle/Junior High Schools Without Librarians	
	# (104)	%	# (300)*	%
0-10 percent	9	8.6%	23	7.7%
11 to 20 percent	11	10.6%	15	5.0%
21 to 30 percent	10	9.6%	35	11.7%
31 to 40 percent	11	10.6%	31	10.3%
41 to 50 percent	16	15.4%	33	11.0%
51 to 60 percent	17	16.3%	38	12.7%
61 to 70 percent	10	9.6%	37	12.3%
71 to 80 percent	7	6.7%	26	8.7%
81 to 90 percent	9	8.6%	19	6.3%
91 to 100 percent	4	3.8%	43	14.3%
Mean	46.7%		53.2%	

* Data on percent of economically disadvantaged students were not available for three of the middle/junior high schools.

Table V. 14: Percent of Economically Disadvantaged Students in High Schools With and Without Librarians

Percent of Economically Disadvantaged Students	High Schools With Librarians		High Schools Without Librarians	
	# (129)	%	# (279)	%
0-10 percent	13	10.1%	17	6.1%
11 to 20 percent	21	16.3%	23	8.3%

21 to 30 percent	22	17.0%	34	12.3%
31 to 40 percent	21	16.3%	42	15.2%
41 to 50 percent	18	13.9%	40	14.4%
51 to 60 percent	16	12.4%	32	11.6%
61 to 70 percent	7	5.4%	23	8.3%
71 to 80 percent	8	6.2%	26	9.4%
81 to 90 percent	3	2.3%	11	4.0%
91 to 100 percent	--	--	29	10.5%
Mean	36.4%		48.7%	

* Data on percent of economically disadvantaged students were not available for two of the high schools.

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APPENDIX A:

TEXAS PUBLIC SCHOOL LIBRARY QUESTIONNAIRE

Please complete the Questionnaire by October 6, 2000

If you have any questions or are unsure how to respond to a specific question please contact Dr. Ester Smith at egs@io.com

I. IDENTIFYING INFORMATION

Please identify your school by name, level, and district. Provide contact information for the individual who has prime responsibility for completing this survey.

If your school has more than one library, please provide information for one library only and record whether this library serves elementary, middle/junior high, or high school students.

1. School Name: ______________________________

2. District Name: ______________________________

3. School Level: **(CIRCLE ONE ONLY)**

1 Elementary

2 Middle/Junior High

3 High school

4 Combined: Elementary-Middle/Junior High

5 Combined:Middle/Junior High and High School

6 Combined: Elementary-Middle/Junior High-High School

4. Grade levels: **(CIRCLE ALL THAT APPLY)**

K 1 2 3 4 5 6 7 8 9 10 11 12

5. Does your school have more than one library?

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1	Yes	2	No (SKIP TO Q. 6)

5a. If yes, the library for which you are providing information is the library serving: **(CIRCLE ONE ONLY)**

1 Elementary school

2 Middle/Junior high

3 High school

6. Name of Respondent: ____________________________________

7. Phone Number: ________________ Fax: _______________

E-mail: ________________

II. LIBRARY MANAGEMENT

1. What is the total seating capacity of the library ? ________

2. Do you prepare and submit a budget request to your school administration?

1	Yes	2	No

3. Is there on-going communication between your library staff and your local public library?

1	Yes	2	No

4. Does your library have a school board approved copyright policy?

1	Yes	2	No

5. Does your library have a school board approved collection development policy?

1	Yes	2	No (SKIP TO Q. 6)

5a. If yes, does your collection development policy address: **(ANSWER YES OR NO TO EACH)**

	Yes	No
Materials selection policy	1	2
Weeding policy	1	2

Reconsideration of challenged materials 1 2

6. Do you have a library policy and procedures manual?

1	Yes	2	No

7. Does your school library have a summer reading program?

1	Yes	2	No

8. Does your library or school work cooperatively with your local public library to promote student participation in a summer reading club at a local public library?

1	Yes	2	No

9. Is your library responsible for coordinating **distance learning**? That is, are any lessons for students and staff development for teachers or librarians taught via television, satellite or a computer network (e.g. T-STAR) handled or coordinated through the library?

1	Yes	2	No

10. Does your district have a district library coordinator? (**CIRCLE ONE ONLY**)

1 Yes, full-time

2 Yes, part-time

3 No district library coordinator

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III. LIBRARY STAFF

1. Please report the level of staffing for your library, by staff category, full-time or part-time, number of persons in each category (adding part-time and full-time persons for each category), and the total number of person hours in a typical week for each staff category. Do not report more than 40 hours per week per person. Count each person only once.

For example, if you have 3 paid professional staff, one is full-time working 40 hours a week and two are part-time working 20 hours a week each, record "1" in the Full-time column, "2" in the Part-time column; "3" in the "Number of Persons" column, and "80" (adding 40+20+20) in the "Total Number of Person Hours per Week" column.

Library Staff Categories	**Number who are Full-time**	**Number who are Part-time**	**Number of Persons (head count, not FTEs)***	**Total Number of Person Hours per Week**
Paid professional staff				
Paid library aides or clerical staff				
Total (for Paid Staff)				
Adult volunteers (per typical week)				
Student volunteers (per typical week)				
Total (for Volunteers)				

* FTE refers to Full Time Equivalent

Please record in the table below the number of paid staff in your library by level of education and credentials and by the hours they work in a typical week.

Do not report more than 40 hours per week per person. Count each person only once.

Highest Education and Certification of Paid Library Staff	**Number of Persons**	**Total Number of Person Hours per Week**
Master's degree or higher with teacher and library science certification		
Master's degree with teacher certification or other state credentials		
Master's degree without teacher certification or other state credentials		

Bachelor's degree with teacher and library science certification		
Bachelor's degree with teacher certification and ExCet		
Bachelor's degree without teacher certification		
Less than Bachelor's degree		
TOTAL (for Paid Staff)		

Does the librarian with primary responsibility for this library also work regularly in another school library?

1 Yes 2 No

IV. SERVICE HOURS PER TYPICAL WEEK

1. Please record the typical weekly number of hours that this school library is open for use.

Library Hours	**Hours per Typical Week**
Hours library is open per typical week **during** school hours	
Hours library is open per typical week **before** school hours	
Hours library is open per typical week **after** school hours	
Hours library is open per typical week **in the summer**	

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V. STAFF ACTIVITIES PER TYPICAL WEEK

Library staff engages in a wide variety of activities each week. Please record (estimating, if necessary) the number of hours spent on each activity in a typical week by your paid staff.

If library staff does not engage in some activities weekly, please estimate the number of hours spent on that activity in a typical month and divide by four or estimate for a year and divide by the number of weeks per year the library is open.

Activities Performed by Paid Library Staff	**Number of Person Hours per Typical Week**
Learning and Teaching	
Planning instructional units with teachers	
Teaching cooperatively with teachers	
Providing staff development to teachers or other school staff	
Meetings with building or district committees/teams/task forces; i.e. curriculum, technology, planning, school improvement	
Assisting individual or groups of teachers to access or utilize state-initiative information (i.e. Reading Initiative, Academics 2000)	
Information Access and Delivery	
Performing basic library activities (i.e. checking in and out, re-shelving, processing, retrieving)	
Identifying materials for instructional units developed by teachers	
Providing information skills instruction (i.e. citations, copyright, critical thinking, evaluation of online sources) to individuals or groups	
Providing reading incentive activities (i.e. book talks, story times, reader's advisory services, author visits)	
Program Administration	
Managing library technology (computers, computer network, automation)	

Administering electronic reading programs such as Accelerated Reader and Electronic Bookshelf	
Managing inter-library loans	
Meeting with building and district library staff	
Meeting with library staff outside the district	
Meeting with principal and/or other building or district administrators	
Attending faculty or staff meetings	
Duties unrelated to school library services (i.e. monitoring recess, lunch, restrooms, buses)	
Other paid staff hours	

VI. LIBRARY USE PER TYPICAL WEEK

Please record information in the table below for each of the types of library use in a typical week.

If these figures must be estimated and it is easier to estimate them for a month or year, please do so. If you estimate for a month, please divide by four. If you estimate for a year, please divide by the number of weeks your library is open annually.

Library Use in a Typical Week	**Number**
Number of scheduled and unscheduled visits to the school library by **individuals** (students, teachers, administrators, parents, other)	
Number of scheduled and unscheduled visits to the school library by **classes or other groups** (groups of teachers, administrators, parents, or others)	
Number of scheduled or unscheduled information skills instruction contacts with **individuals** (students, teachers, administrators)	
Number of scheduled or unscheduled information skills instruction contacts with **classes or groups** (groups of teachers, administrators, parents, or others)	

Total number of books and other materials **checked out** during the most recent full week	
Number of materials **used in the library** (estimate based on re-shelving count)	
Number of loans provided by library to other libraries in district	
Number of loans received by library from other libraries in the district or ESC	
Number of loans provided by library to other libraries outside the district	
Number of loans received by library from other libraries outside the district	

2. In a typical week, what percent of the classes that visit the library are:

Flexibly scheduled (e.g. scheduled for varying time periods according to need): ______%

Regularly scheduled (e.g. scheduled for previously specified times): ______%

3. In a typical week, how many hours in total do students spend online in the library? (*You may estimate hours online for typical day and multiply by five*)

________ hours spent online

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VII. LIBRARY TECHNOLOGY

1. Please record the following information in the table below. Please distinguish between the number of computers in your school that are located in or under the supervision of your library (3rd column in table) and computers from which networked library resources may be accessed (4th column 4 in table).

***Computers under the supervision of the library but not in the library** may include those in a separate computer lab. These should be counted together with the computers located in the library (3rd column). Do not include non-networked library computers from which networked library resources cannot be accessed.*

***Computers from which networked library resources may be accessed** may be located in classrooms, administrative offices, a separately administered computer lab, mini-lab, or any other school space not under the supervision of the library (4th column).*

Please note. *Count any computer only once to calculate the Total Number of Computers. (Line 1) However, any computer may be counted more than once for lines 2-13.*

Line	Number of Computers	Number of Computers Located in or under Library Supervision	Number of Computers in School from which Networked Library Resources May be Accessed
1	Total Number of Computers		
2	Number of computers with Internet connection		
3	Number on a Local Area Network (LAN) *(A LAN is a network of computers linked locally, usually within one building.)*		
4	Number on a Wide Area Network (WAN) *(A WAN is a network of computers linked over large physical distance. It may include all schools in a district, community or ESC area.)*		
5	With access to the school library catalog		
6	With access to school library databases		
7	With CD ROM drives		
8	With networked access to CD ROM resources		
9	Number of computers that can display text only		
10	Number of computers that can display graphics (WWW)		
11	Number of computers connected to a modem or equivalent		
12	Number of computers connected directly or networked to a printer		
13	Number of computers with any accommodations for persons with disabilities (voice synthesizer, magnified screen)		

2. For the total number of computers located in or under library supervision reported in the table above (3rd column), identify the number of each of the following types.

Number of PCs by Processor Speed	**Number of PCs**	**Number of Macs Running**	**Number of Macs**
Pentium or higher		PowerMac or later	
486		System 7	
386 or lower		System 6 or earlier	
TOTAL Number of PCs		TOTAL Number of Macs	

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3. Which one of the following represents the **fastest** Internet service connection speed available on any of the computers in or under library supervision? (**CIRCLE ONE ONLY**)

1 None

2 14.4 K or less

3 28.8 K

4 56K (via dial-up)

5 56K (via dedicated line)

6 ISDN

7 T-1

8 Other: _______________

4. Does your library have:

	Yes	No
An automated ciculation system	1	2
An automated district wide catalog	1	2
An automated catalog accessible through the Internet	1	2
A telephone	1	2
A fax machine	1	2
A CD ROM server	1	2
A video projector	1	2
A digital camera	1	2
A satellite dish	1	2
One or more laptops	1	2

5. Does your school have a board adopted Internet access policy?

1 Yes 2 No

6. Please describe your library's conditions/restrictions of student Internet access. (**CIRCLE ALL THAT APPLY**)

1 No restrictions

2 With parental permission and/or acceptable use agreement

3 Restricted for grades: (**SPECIFY**) ____________________

4 Other restrictions: ________________________________

VIII. LIBRARY COLLECTION

1. Does your library subscribe to any online licensed services, **exclusive** of the services associated with the Texas Library Connection (TLC)?

	Yes	No
Online periodical services (e.g. BigChalk, H.W. Wilson)?	1	2
CD ROM services (e.g. SIRS, Newsbank)?	1	2
Other full text services (e.g. encyclopedias)?	1	2

2. Are any of your licensed online databases (TLC and others) accessible from teachers' and students' home computers?

	Yes	No
Teachers	1	2
Students	1	2

3. Please record information on all your holdings (in or not in circulation) available for use by teachers and/or students

Collection	Number
Print volumes	
Current print subscriptions to magazines	
Current print subscriptions to newspapers	

Electronic subscriptions (received through Internet access)	
Encyclopedias and reference titles on CD ROM or laser disc	
Video materials (cassettes and disks)	
Computer software packages for use in school library by students	

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4. How many volumes did you purchase for the library in the 1999-2000 school year in total and for each of the following Dewey decimal categories?

Volumes Purchased in School Year 1999-2000	**Number**
Total number of volumes purchased	
616/Medicine and health	
629.4 Space	
320/Government	

5. Do libraries in your district participate in some system for the evaluation of print and non-print library resources?

1 Yes 2 No

6. Which of the following titles (in print or electronic version) are available in your school library? (**CIRCLE ALL THAT APPLY AND RECORD COPYRIGHT DATE**)

	Copyright Date
1 Elementary School Library Collection	
2 Children's Catalog	
3 Junior High School Catalog	
4 High School Catalog	

7. Which of the following selection tools do you regularly use? (**CIRCLE ALL THAT APPLY)**

1 Booklist

2 Hornbook

3 School Library Journal

4 Publisher's Catalog

5 Cooperative Children's Book Center publications

IX. LIBRARY OPERATING EXPENDITURES AND CAPITAL OUTLAY

1. Please report your library's expenditures, capital outlay and totals for 1999-2000, including funds from both the school budget and other sources (e.g. grants, donations, PTAs).

1999-2000 Operating Expenditures	**School Budget**	**All Other Sources**
Books as reported in budget category 12-6669		
Newspapers and magazines as reported in budget category 12-6399		
Electronic format materials (software, CD ROM, laser disc)		
Non-print materials (audio, video, microform)		
Electronic access to information (online databases, searching, Internet access)		
Other operating expenditures		
TOTAL Operating Expenditures		
1999-2000 Capital Outlay	**School Budget**	**All Other Sources**
Equipment (computers, CD ROM drives, VCRs)		
Other capital purchases (furniture, shelving)		
TOTAL Capital outlay		

THANK YOU for completing the questionnaire!

If you have any questions please contact Dr. Ester Smith at e-mail at egs@io.com

Please return completed questionnaire in the accompanying postage-paid envelope to:
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6106 Ledge Mountain
Austin, TX 78731

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